



15
CHAPTER

HOMEOSTASIS

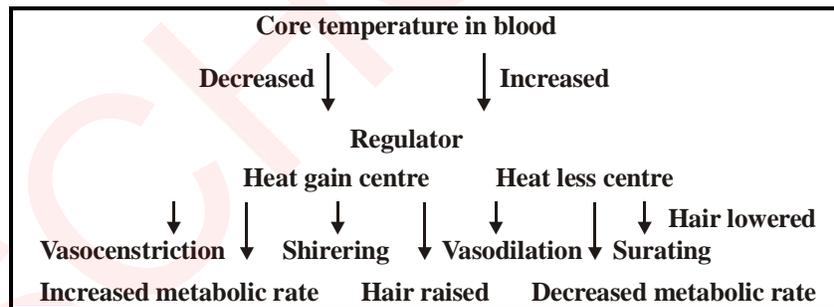
- The more concentrated environment is termed as:**
 - Anisotonic
 - Isotonic
 - Hypotonic
 - Hypertonic
- Mango plant is:**
 - Mesophyte
 - Hydrophyte
 - Xerophyte
 - None of the above
- The excretory system of Planaria called:**
 - Metanephridium
 - Protonephridium
 - Nephron
 - Nephridium
- In urea cycle, one molecule of ammonia and one molecule of CO_2 combine with one molecule of ornithine to form:**
 - Urea
 - Arginine
 - Arginosuccinate
 - Citrulline
- Unlike an earthworm, metanephridia in mammalian nephron:**
 - Filters blood instead of coelomic fluid
 - Function in both osmoregulation and excretion of nitrogenous wastes
 - Form urine by changing the composition of fluid inside the tubule
 - Is intimately associated with a capillary network
- Which process in the nephron is least selective?**
 - Filtration
 - Transport across the epithelium of a collecting duct
 - Reabsorption
 - Secretion

7. **Malpighian tubules are excretory organs found in:**
- (A) Vertebrate (B) Annelids
(C) Insects (D) Flatworms
8. **Ammonia is secreted by most:**
- (A) Adult amphibians (B) Organism that produce eggs
(C) Bony fishes (D) Insect
9. **The vertebrate liver functions in all the following regulatory processes except:**
- (A) Detoxification of harmful chemicals
(B) Energy reserves in the formation of glycogen
(C) Production of Nitrogenous wastes
(D) Osmoregulation by variable excretion of salts
10. **Non-shivering thermogenesis is:**
- (A) A hormone triggers the heat production by increasing metabolic rate
(B) A behavioral adaptation for absorbing heat in ectotherms
(C) Muscle contraction by movements as in winter months
(D) A heat producing method of large fishes
11. **Urea can be eliminated with quantity of water as compared to ammonia:**
- (A) 1/10 (B) 1/20
(C) 1/5 (D) 1/50
12. **Oxalates are present in:**
- (A) Meat (B) Tomatoes
(C) Green vegetable only (D) Green vegetable and tomatoes
13. **Movement of ground squirrel to burrows in midday heat is an:**
- (A) Physiological adaptation (B) Structural adaptation
(C) Behavioral adaptation (D) Morphological & physiological adaptations
14. **Normal body temperature range between:**
- (A) $36.1^{\circ}\text{C} - 37.8^{\circ}\text{C}$
(B) $36.0^{\circ}\text{C} - 38.8^{\circ}\text{C}$
(C) $36.7^{\circ}\text{C} - 37.8^{\circ}\text{C}$
(D) $37.1^{\circ}\text{C} - 38.6^{\circ}\text{C}$

- 15. Humming bird belongs to a category called:**
(A) Heterothem (B) Poikilotherms
(C) Ectothem (D) Endotherm
- 16. Vasodilation:**
(A) Nucleic acid (B) Increase the blood supply to the skin
(C) Protein (D) ADH
- 17. Nitrogenous base:**
(A) Ectotherm (B) Protien
(C) Nucleic acid (D) ADH
- 18. Reptile:**
(A) Protein (B) Ectotherm
(C) Nucleic acid (D) ADH
- 19. Collecting duct:**
(A) ADH (B) Protein
(C) Ectotherm (D) Increase the blood supply to the skin
- 20. Dialyzer:**
(A) 15% (B) Kidney machine
(C) Adrenal cortex (D) Presence of sweat gland
- 21. Stone of uric acid:**
(A) Adrenal cortex (B) 15%
(C) Kidney machine (D) 10%
- 22. Structural adaptation:**
(A) Presence of sweat gland (B) Liver
(C) Kidney machine (D) Adrenal cortex
- 23. Aldosterone:**
(A) Presence of sweat gland (B) Adrenal cortex
(C) Liver (D) Kidney machine
- 24. Nephron:**
(A) Passive loss of water from gills
(B) Kidney
(C) Large amount of hypotonic contain little salt
(D) Body fluid isotonic to external environment

- 25. Fresh water fish:**
- (A) Body fluid isotonic to external environment
 - (B) Passive loss of water from gills
 - (C) Large amount of hypotonic urine contain little salt
 - (D) Kidney
- 26. Bile:**
- (A) Liver
 - (B) Body fluid isotonic to external environment
 - (C) Kidney
 - (D) Large amount of hypotonic urine contain little salt
- 27. Osmoconformers?**
- (A) Body fluid isotonic to external environment
 - (B) Passive loss of water from gills
 - (C) Large amount of hypotonic urine contain little salt
 - (D) Kidney
- 28. Thermoreceptors:**
- (A) Cockroach
 - (B) Hypothalamus
 - (C) Loop of Henle
 - (D) Bowman capsule
- 29. Uric acid:**
- (A) Cockroach
 - (B) Loop of Henle
 - (C) Bowman capsule
 - (D) Hypothalamus
- 30. Lithotripsy:**
- (A) Cockroach
 - (B) Hypothalamus
 - (C) Loop of Henle
 - (D) Non-surgical removal of gall bladder stone
- 31. Posterior lobe:**
- (A) Active transport
 - (B) Sensor
 - (C) Passive transport
 - (D) Ant diuretic hormone
- 32. Ascending loop of Henle:**
- (A) Passive transport
 - (B) Active transport of Na^+ ions
 - (C) Sensor
 - (D) Native to cold region

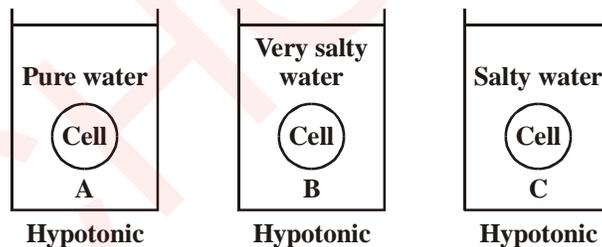
- 33. Oak:**
 (A) Passive transport (B) Active transport
 (C) Sensor (D) Native to cold region
- 34. Receptors:**
 (A) Sensor (B) Native to cold region
 (C) Antidiuretic Hormone (D) Passive transport
- 35. Homeostasis is the process of maintaining a constant environment despite conditions:**
 (A) External internal (B) Internal external
 (C) Both (A) and (B) (D) None of these
- 36. Homeostasis is based on:**
 (A) Thermoregulation only (B) Catabolism
 (C) Feed back mechanism (D) Anabolism
- 37. Two major control centers for homeostasis are:**
 (A) Exocrine and endocrine glands (B) Apocrine and Heterocrine glands
 (C) Receptors and effectors (D) Brain and endocrine glands
- 38. Which of the following activity is regulated by homeostasis?**
 (A) Temperature (B) Water balance
 (C) Blood sugar level (D) All (A), (B) and (C)
- 39. What should be the Regulator in this chart?**



- (A) Medulla oblongata (B) Pituitary gland
 (C) Spinal cord (D) Hypothalamus
- 40. What are the components of feed back mechanism?**
 (A) Receptors, insulators, effectors (B) Receptors, suppressors, effectors
 (C) Receptors, regulators, effectors (D) Receptors, depressors, effectors

- 41. A cell is placed in a solution and swells. This solution is:**
(A) Isotonic to cell (B) Hypertonic to cell
(C) Hypotonic to cell (D) None of these
- 42. In an isotonic there would be:**
(A) No net movement of water
(B) Net movement of water into the cell
(C) Net movement of water out of the cell
(D) Bursting of the cell
- 43. A cell whose internal salt concentration is 0.3 per liter is placed in a solution having salt concentration 0.5 per liter. The solution is:**
(A) Isotonic to the cell (B) Hypotonic to the cell
(C) Hypertonic to cell (D) None of these
- 44. Osmosis is defined as:**
(A) Flow of solvent through semi-permeable membrane from higher to less concentrated solution
(B) Flow of solvent through semi-permeable membrane from less to higher concentrated solution
(C) Flow of a solute from a semi-permeable membrane
(D) Flow of water without membrane
- 45. Plasmolysis of a human red blood cell would occur if the cell were:**
(A) In an isotonic solution (B) In a hypertonic solution
(C) In a hypotonic solution (D) None of the above
- 46. When an animal cell is placed in a hypotonic environment, it will:**
(A) Undergo cytolysis (B) Undergo plasmolysis
(C) Be at equilibrium (D) Its turgor pressure decreases
- 47. The contractile vacuole of a paramecium should be active when the paramecium is in:**
(A) An isotonic environment (B) A hypotonic environment
(C) A hypertonic environment (D) Any environment
- 48. The tendency of a solution to take up water when separated from pure water by a selectively permeable membrane is called:**
(A) Osmotic pressure (B) Turgor pressure
(C) Diffusion pressure deficit (D) Water potential

49. **Xerophytes have:**
(A) Deep roots for water uptake (B) Succulent stems for storage of water
(C) Few stomata to limit water loss (D) All (A), (B) and (C)
50. **A plant without cuticle in leaves and stem, having increased number of stomata, partially or completely submerged in water is:**
(A) Mesophyte (B) Hydrophyte
(C) Both (A) and (B) (D) Halophyte
51. **The entry of water from salty soil into roots of halophytes takes place because the root of halophytes develop:**
(A) High water potential (B) Low osmotic pressure
(C) Low water potential (D) All of these
52. **Animals that do not adjust their internal osmoregularity and are isotonic with their environment are:**
(A) Osmoconformers (B) Osmoregulators
(C) Thermoregulators (D) Thermoconformers
53. **Animals that are not isotonic with their environment and have developed mechanisms to regulate their internal solute and water concentrations are:**
(A) Osmoconformers (B) Osmoregulators
(C) Thermoregulators (D) Both (A) and (B)
54. **What is correct for diagram below?**



- (A) Cell "A" will lose H_2O , cell "B" will gain H_2O , Cell "C" neither gain nor loses H_2O
- (B) Cell "A" neither gains nor loses H_2O , Cell "B" will gain H_2O , Cell "C" will lose H_2O
- (C) Cell "A" will gain, Cell "B" neither gains nor loses H_2O , Cell "C" will lose H_2O
- (D) Cell "A" will gain H_2O , Cell "B" will lose H_2O , Cell "C" neither gains nor loses H_2O

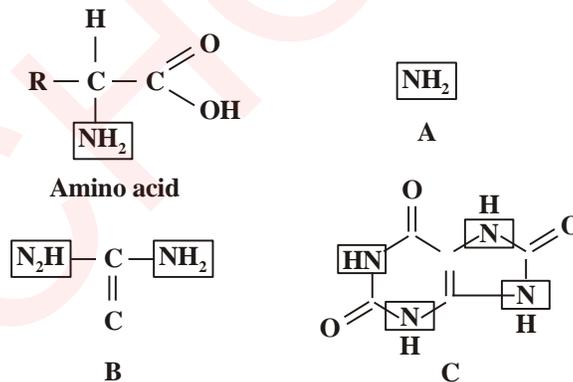
- 55. An increase in blood sugar level triggers the release of the hormone insulin by the pancreas, the hormone insulin lowers blood sugar level restoring the body to its original blood glucose level by converting glucose to glycogen. This is an example of:**
- (A) Positive feed back (B) Negative feed back
(C) Homeostatic imbalance (D) None of these
- 56. A fish in fresh water:**
- (A) Produces dilute urine (B) Have a hypertonic body
(C) Produces concentrated urine (D) (A) and (B)
- 57. To hags fishes, sea water is:**
- (A) Isotonic (B) Hypotonic
(C) Hypertonic (D) None of these
- 58. A fish in marine water:**
- (A) Produces concentrated urine (B) Have a hypotonic body
(C) Produces dilute urine (D) (A) and (B)
- 59. Metabolic water is:**
- (A) Water outside the cells of animals
(B) Produced by oxidation of fats
(C) Useful to desert mammals
(D) (B) and (C)
- 60. Plants do not excrete ammonia, urea and uric acid because:**
- (A) They lack nitrogenous waste
(B) Their metabolism is protein based
(C) Their nitrogenous products are recycled
(D) All (A), (B) and (C)
- 61. Plants excrete:**
- (A) Excess water (B) Excess oxygen
(C) Excess carbon dioxide (D) All (A), (B) and (C)
- 62. Which one of the following has maximum toxicity?**
- (A) Ammonia (B) Urea
(C) Uric acid (D) Creatinine

- 63. Which one of the following has medium toxicity?**
(A) Ammonia (B) Urea
(C) Uric acid (D) Water
- 64. Which one of the following has least toxicity?**
(A) Ammonia (B) Urea
(C) Uric acid (D) All are highly toxic
- 65. Guttation take place through:**
(A) Stomata (B) Injured tissue
(C) Lenticels (D) Hydathodes
- 66. The excretory organs of Planaria are known as:**
(A) Protonephridia (B) Flame cells
(C) Both (A) and (B) (D) Metanephridia
- 67. Tubular excretory system of earth worm consists of:**
(A) Protonephridia (B) Coxal gland
(C) Malpighian tubules (D) Metanephridia
- 68. The internal opening of the metanephridium is known as:**
(A) Nephrostoms (B) Nephridiopore
(C) Excretory pore (D) All (A), (B) and (C)
- 69. Liver Synthesizes:**
(A) Non-essential aminoacids (B) Plasma proteins
(C) Cholesterol (D) All (A), (B) and (C)
- 70. In humans, excess nitrogen is eliminated from the body by mainly converting it to:**
(A) Urea (B) Uric acid
(C) Ammonia (D) Amine phosphate
- 71. The liver is:**
(A) Smallest internal organ (B) Medium-sized internal organ
(C) Body's largest internal organ (D) All options are incorrect
- 72. The three major body fuels managed by the liver are:**
(A) Protein, vitamins and minerals (B) Carbohydrate, fat and protein
(C) Glucose, fructose and sucrose (D) Glucose, iron and protein

- 73. Pigments found in bile are formed during catabolism:**
(A) Haem catabolism (B) Globin catabolism
(C) Cholesterol catabolism (D) Both (A) and (C)
- 74. The nephron is:**
(A) The site of urine storage (B) The function unit of the kidney
(C) The site where ADH is produced (D) Also called the "Bowman's capsule"
- 75. From the distal convoluted tubule, filtrate will be carried to the:**
(A) Renal corpuscle (B) Collecting duct
(C) Nephron loop (D) Proximal convoluted tubule
- 76. All of the following are normally found in urine except:**
(A) Sodium ions (B) Uric acid
(C) Creatinine (D) Glucose
- 77. Hormone regulates the transfer of sodium from the nephron to the blood:**
(A) Parathormone (B) Anti-diuretic
(C) Aldosterone (D) Vasopression
- 78. Conversion of ammonia into urea, occurs in:**
(A) Kidneys (B) Lungs
(C) Intestine (D) Liver
- 79. Separation of amino acid into amino and carboxyl group is know as:**
(A) Amination (B) Excretion
(C) Deamination (D) Egestion
- 80. Uric acid is the chief nitrogenous waste material in the excretory system of:**
(A) Reptiles (B) Birds
(C) Insects (D) All of these
- 81. Which of the following is not structure of kidney:**
(A) Cortex (B) Medulla
(C) Pelvis (D) Urethra
- 82. In mammalian kidney, the pyramids are seen in:**
(A) Cortex (B) Medulla
(C) Pelvis (D) Hilus

- 83. The number of nephrons in ONE kidney of man is:**
- (A) 4 million (B) 2 million
(C) 8 million (D) 1 million
- 84. ADH increases ----- of -----from the collecting duct:**
- (A) Absorption, sodium (B) Diffusion, chlorine
(C) Absorption, water (D) Diffusion, Ammonia
- 85. Two counter-current systems are formed in the kidney by the:**
- (A) Henle's loop and PCT (B) Henle's loop and DCT
(C) Henle's loop and collecting duct (D) Henle's loop and vasa rectae
- 86. Cholesterol is excreted in the:**
- (A) Sebum (B) Bile
(C) Sweat (D) Both (A) and (B)
- 87. Malpighian body is composed of:**
- (A) Bowman's capsule only (B) Glomerulus only
(C) Bowman's capsule & Glomerulus (D) Henle's loop and vasa rectae
- 88. Daily urine output of man is:**
- (A) 1-2 liters (B) 1-3 liters
(C) 1-4 liters (D) 1-5 liters
- 89. Tubular structure which carries urine from bladder to outside:**
- (A) Ureter (B) Hilus
(C) Pelvis (D) Urethra
- 90. Ultrafiltration occurs in:**
- (A) Bowman s capsule (B) Proximal convoluted tube
(C) Henle s loop (D) Distal convoluted tube
- 91. The greater the demand of conserving water, the greater would be the number of:**
- (A) Juxta-medullary nephrons (B) Cortical nephrons
(C) Capillaries of glomerulus (D) Both (A) and (B)

92. Each kidney is enclosed by a thin membranous covering called:
- (A) Peritonium (B) Peritreme
(C) Perizonium (D) All (A), (B) and (C)
93. Ph of human urine is:
- (A) 7.4 (B) 3.5
(C) 5.00 (D) 8.00
94. The hormone which increases the reabsorption of calcium ions in nephron is:
- (A) Aldosterone (B) Parathormone
(C) Anti-diuretic (D) Vasopression
95. The process by which some poisonous substances are secreted from peritubular capillaries into nephric filtrate is termed as:
- (A) Tubular reabsorption (B) Tubular secretion
(C) Counter-current exchange (D) None of these
96. It is a cyclic process of enzymatic reactions which operates in the liver cells as a result of which urea is formed from ammonia, carbondioxide and NH_2 group:
- (A) Ornithine cycle (B) Citruline cycle
(C) Arginine cycle (D) All of these
97. Select the correct for nitrogenous wastes in this diagram:

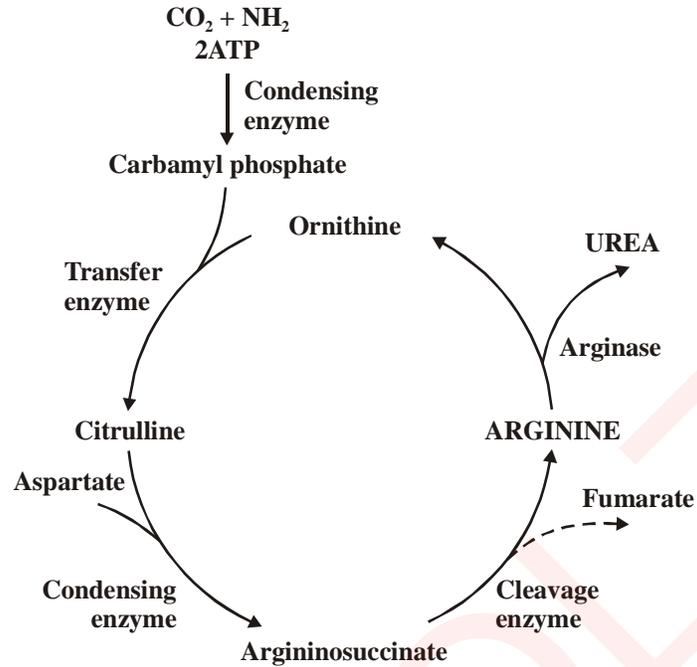


- (A) "A" Urea "B" ammonia "C" uric acids
(B) "A" uric acid "B" ammonia "C" urea
(C) "A" Ammonia "B" urea "C" uric acid
(D) "A" Ammonia "B" uric acid "C" urea

- 98. Blood enters the kidney through a branch of aorta called:**
- (A) Afferent arteriole (B) Renal artery
(C) Efferent arteriole (D) Renal vein
- 99. A capillary tuft from which fluid leaves the circulatory system:**
- (A) Bowman capsule (B) Proximal convoluted tube
(C) Glomerulus (D) Loop of Henle
- 100. In ectotherms and endotherms heat can be lost through:**
- (A) Evaporation (B) Radiation
(C) Convection (D) All (A), (B) and (C)
- 101. Percentage of kidney stones composed of calcium oxalate phosphate:**
- (A) 5% (B) 20%
(C) 70% (D) 90%
- 102. About % of kidney stones composed of uric acid:**
- (A) 5% (B) 20%
(C) 70% (D) 90%
- 103. Dialysis cleans the blood by:**
- (A) An artificial kidney (B) Filtering it within abdomen
(C) Removing glucose from blood (D) Both (A) and (B)
- 104. Haemodialysis means:**
- (A) Removing the blood (B) Cleaning the blood
(C) Diluting the blood (D) All options are correct
- 105. These are animals that produce metabolic heat at low rates and rely primarily on conditions of their surroundings:**
- (A) Endotherms (B) Heterotherms
(C) Ectotherms (D) Both (B) and (C)

- 106. These are animals capable of varying degrees of endothermic heat production, but they generally do not regulate body temperature within as narrow a range as endotherms:**
- (A) Ectotherms (B) Poikilotherms
(C) Heterotherms (D) None of these
- 107. It is technique of breaking stones inside kidneys, ureters and urinary bladder:**
- (A) Lithotrophy (B) Lithography
(C) Lithotripsy (D) All options are correct
- 108. Mammals maintain their body temperature within a range of:**
- (A) 25°C to 35°C (B) 30°C to 40°C
(C) 36°C to 43°C (D) 36°C to 38°C
- 109. Birds maintain their body temperature within a range of:**
- (A) 25°C to 35°C (B) 30°C to 40°C
(C) 41°C to 43°C (D) 36°C to 38°C
- 110. Regulation of body temperature in homiotherms during high environmental temperature involve:**
- (A) Vaso-dilation (B) Lowering the hairs
(C) Reduction in sub-cutaneous fat (D) All (A), (B) and (C)
- 111. Regulation of body temperature in homiotherms during cold environmental temperature involve:**
- (A) Vaso-contraction (B) Erection of hairs
(C) Increase in sub-cutaneous fat (D) All (A), (B) and (C)
- 112. Displace the set point of hypothalamus above the normal point of 37°C:**
- (A) Pyrenins (B) Pyridoxins
(C) Pyrogens (D) All (A), (B) and (C)
- 113. An animal when taken into hot area loses heat by sweating and when to cold area increases muscular activity to produce more heat. The animal is:**
- (A) Homeothermic (B) Poikilothermic
(C) Ectothermic (D) None of these

114. Which cycle is shown in this diagram?



- (A) Ornithine cycle (B) Urea cycle
(C) Urine cycle (D) Both (A) and (B)

Answers

Sr.	Ans.								
1.	(D)	2.	(A)	3.	(B)	4.	(D)	5.	(A)
6.	(A)	7.	(C)	8.	(C)	9.	(D)	10.	(A)
11.	(A)	12.	(D)	13.	(C)	14.	(A)	15.	(A)
16.	(B)	17.	(C)	18.	(B)	19.	(A)	20.	(B)
21.	(D)	22.	(A)	23.	(B)	24.	(B)	25.	(C)
26.	(A)	27.	(A)	28.	(B)	29.	(A)	30.	(D)
31.	(D)	32.	(B)	33.	(D)	34.	(A)	35.	(B)
36.	(C)	37.	(D)	38.	(D)	39.	(D)	40.	(C)
41.	(C)	42.	(A)	43.	(C)	44.	(B)	45.	(B)
46.	(A)	47.	(B)	48.	(A)	49.	(D)	50.	(B)
51.	(C)	52.	(A)	53.	(B)	54.	(D)	55.	(B)
56.	(D)	57.	(A)	58.	(D)	59.	(D)	60.	(C)
61.	(D)	62.	(A)	63.	(B)	64.	(C)	65.	(D)
66.	(C)	67.	(D)	68.	(A)	69.	(D)	70.	(A)
71.	(C)	72.	(B)	73.	(A)	74.	(B)	75.	(B)
76.	(D)	77.	(C)	78.	(D)	79.	(C)	80.	(D)
81.	(D)	82.	(B)	83.	(D)	84.	(C)	85.	(D)
86.	(B)	87.	(C)	88.	(A)	89.	(D)	90.	(A)
91.	(A)	92.	(A)	93.	(C)	94.	(B)	95.	(B)
96.	(A)	97.	(C)	98.	(B)	99.	(C)	100.	(D)
101.	(C)	102.	(A)	103.	(D)	104.	(B)	105.	(C)
106.	(C)	107.	(C)	108.	(D)	109.	(C)	110.	(D)
111.	(D)	112.	(C)	113.	(A)	114.	(D)		

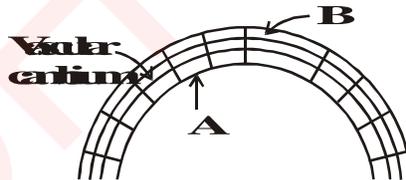
SCHOOLZ



SUPPORT AND MOVEMENTS

- Movement takes place at:**
 - Cellular level
 - Organ level
 - Organism level
 - All (A), (B) and (C)
- The whole body of Bryophyta is made up of:**
 - Collenchyma cells
 - Sclerenchyma cells
 - Parenchyma cells
 - Airenchyma cells
- Collenchyma can be distinguished from parenchyma by:**
 - Being dead cells
 - Without large vacuole
 - Increased thickness of their cell walls
 - All (A), (B) and (C)
- A tissue whose function is support and it performs that function while it is dead is:**
 - Collenchyma
 - Parenchyma
 - Sclerenchyma
 - (A) and (B)
- In Angiosperma the tissue that produces secondary xylem and secondary phloem is:**
 - Protoderm
 - Ground meristem
 - Intercalary
 - Vascular cambium
- The unspecialized packing tissue found in epidermis, cortex and pith is:**
 - Parenchyma
 - Collenchyma
 - Sclerenchyma
 - Cork cambium

7. **Xylem vessels have walls impregnated with:**
 (A) Cutin (B) Chitin
 (C) Keratin (D) Lignin
8. **It covers the plant but is replaced by:**
 (A) Cuticle, epidermis (B) Endodermis, epidermis
 (C) Epidermis, cork (D) All (A), (B) and (C)
9. **Secondary growth in plants begins with the formation of:**
 (A) Vascular cambium only (B) Cork cambium only
 (C) Vascular and cork cambium (D) Inter-calary meristem
10. **Cork is waterproof because its cell walls are impregnated with:**
 (A) Chitin (B) Suberin
 (C) Keratin (D) Pillin
11. **The xylem in the center of the tree that has stopped conducting water and minerals and is storing waste products from the plant is:**
 (A) Sap wood (B) Heart wood
 (C) Peripheral wood (D) Both (B) and (C)
12. **The portion of the xylem that is conducting water and minerals and hasn't started storing waste products is:**
 (A) Sap wood (B) Heart wood
 (C) Central wood (D) Both (A) and (C)
13. **Select the correct option for Label A and B in the following diagram:**



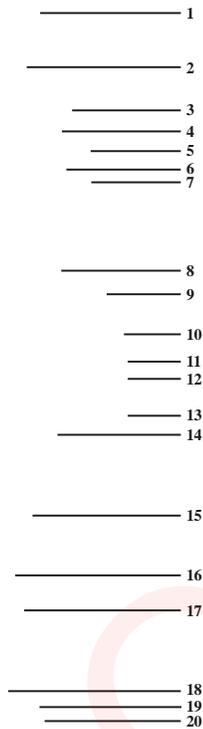
- (A) "A" New phloem "B" New xylem.
 (B) "A" New cork, "B" New cortex.
 (C) "A" New cork, "B" New Phelloderm.
 (D) "A" New xylem, "B" New Phloem.
14. **Lenticels are necessary for:**
 (A) Photosynthesis (B) Gaseous exchange
 (C) Water absorption (D) All options are correct

15. **Movement of Railway creeper around any rope is an example of:**
(A) Nutation (B) Turgor movement
(C) Tropic movement (D) Seismonastic movement
16. **What is directional movement response that occurs in response to a directional stimulus is called?**
(A) Nutation (B) Tropism
(C) Both A and B (D) Turgor movement
17. **Tropic movement in response to touch is known as:**
(A) Geotropism (B) Aerotropism
(C) Thigmotropism (D) Both B and C
18. **The growth of the pollen tube always towards the ovules, is due to:**
(A) Geotropism (B) Thigmotropism
(C) Phototropism (D) Chemotropism
19. **The movement of a plant in response to a touch or contact is:**
(A) Nyctinastic (B) Thermonastic
(C) Haptonastic (D) Hyponastic
20. **The flowers of Oxalis and Portulaca open in the day and close at night. It is called:**
(A) Nyctinastic movement (B) Thermonastic movement
(C) Haptonastic movement (D) Thigmonastic movement
21. **Exoskeleton in Diatoms is made up of:**
(A) Protein (B) CaCO_3
(C) Silica (D) Chitin
22. **Molluscs have an exoskeleton in the form of:**
(A) Proteinceous shell (B) Siliceous shell
(C) Calcareous shell (D) Chitineous shell
23. **The periodic shedding of exoskeleton in arthropods is known as:**
(A) Moulting (B) Ecdysis
(C) Both (A) and (B) (D) Stridulation
24. **What is the total body weight of human skeleton?**
(A) 80% (B) 70%
(C) 40% (D) 18%

- 25. The tooth bearing bone of lower jaw is:**
(A) Atlas (B) Innominate
(C) Incus (D) Dentary
- 26. An adult human endoskeleton consists of:**
(A) 363 bones (B) 639 bones
(C) 206 bones (D) Number varies by the individual
- 27. The lower two pairs of ribs are:**
(A) True ribs (B) False ribs
(C) Floating ribs (D) All (A), (B) and (C)
- 28. Total number of ribs in your axial skeleton is:**
(A) 12 (B) 24
(C) 33 (D) 26
- 29. The original number of vertebrae in human vertebral column is:**
(A) 12 (B) 24
(C) 33 (D) 26
- 30. The visible number of vertebrae in human vertebral column is:**
(A) 12 (B) 24
(C) 33 (D) 26
- 31. Humerus forms a ball and socket joint with:**
(A) Clavicle (B) Sternum
(C) Innominate (D) Scapula
- 32. The bones of lower arm are:**
(A) Tibia and fibula (B) Radius and ulna
(C) Carpals and metacarpals (D) Phalanges
- 33. Which one of these makes bones hard?**
(A) Carbohydrates (B) Minerals
(C) Proteins (D) Fats
- 34. Which of the following is not part of the axial skeleton?**
(A) Sternum (B) Vertebrae
(C) Femur (D) Skull

35. In human back bone the caudal vertebrae are reduced to 4 in number and are fused to form the:
- (A) Sacrum (B) Innominatum
(C) Coccyx (D) Ischium
36. Bones are joined to each other at joints by:
- (A) Tendons (B) Ligaments
(C) Hyaline cartilage (D) Both (A) and (B)
37. Muscles are attached to bones by:
- (A) Tendons (B) Ligaments
(C) Synovial membrane (D) Both (A) and (B)
38. The joint that allows the skull to rotate on our spine is called:
- (A) Hinge joint (B) Fibrous joint
(C) Sliding joint (D) Pivotal joint
39. The intervertebral disks which absorb shock and assist in limited movement of disks:
- (A) Collagen fibers (B) Osteonectin protein
(C) Cartilage (D) All (A), (B) and (C)
40. The curve in the neck is composed of seven vertebrae and is known as the:
- (A) Lumbar region (B) Sacral region
(C) Coccygeal region (D) Cervical region
41. The 12 vertebrae in the second curve of vertebral column are known as:
- (A) Cervical vertebrae (B) Thoracic vertebrae
(C) Lumbar vertebrae (D) Sacral vertebrae
42. The shoulder girdle consists of two bones:
- (A) Humerus and scapula (B) Humerus and ulna
(C) Clavicle and scapula (D) Ilium and Ischium
43. The pelvic girdle is composed of three pairs of fused bones:
- (A) Ilium, Ischium and frontal (B) Clavicle, scapula and pubis
(C) Malleus, Incus and stapes (D) Ilium, ischium and pubis

44. Select the correct option for label “16” in the following diagram:



- (A) Patella (B) Fibula
 (C) Tibia (D) Radius
45. The bones of the wrist are called:
 (A) Carpals (B) Metacarpals
 (C) Tarsals (D) Metatarsals
46. The joint found between the flat bones of the skull is classified as:
 (A) Immovable (B) Movable
 (C) Slightly movable (D) None of these
47. These cells are located in bone tissue:
 (A) Chondroblasts (B) Osteocytes
 (C) Fibroblasts (D) Chondrocytes
48. Chondroblasts produce:
 (A) Basement membranes (B) Bone matrix
 (C) Cartilage matrix (D) Endothelium

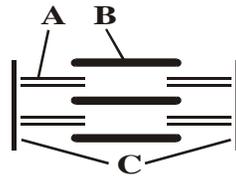
- 49. Gliding joints are present between:**
(A) Carpals and tarsals (B) Humerus and ulna
(C) Femur and innominate (D) Vertebrae
- 50. Which type of joint is the most mobile?**
(A) Pivot joint (B) Gliding joint
(C) Ball and socket joint (D) Fibrous joint
- 51. The main protein in the matrix of cartilage is:**
(A) Collagen (B) Osteonectin
(C) Keratin (D) Actin
- 52. The jointed surfaces of bones are covered with:**
(A) Hyaline cartilage (B) Compact cartilage
(C) Articular cartilage (D) Both (A) and (B)
- 53. The process of bone formation is called:**
(A) Ossification (B) Chondrification
(C) Ossi-chondrification (D) Both (A) and (B)
- 54. Hinge joint is present between:**
(A) Humerus and radio-ulna (B) Femur and pectoral girdle
(C) Femur and acetabulum (D) Humerus and pectoral girdle
- 55. The total number of bones in your right arm is:**
(A) 30 (B) 32
(C) 35 (D) 60
- 56. Which bone in man is concerned with locomotion?**
(A) Ulna (B) Femur
(C) Humerus (D) All of these
- 57. The spinal degeneration and deformity of the joints of two or more vertebrae that commonly occurs with aging causes:**
(A) Sciatica (B) Osteoporosis
(C) Spondylosis (D) Both (B) and (C)
- 58. In which skeletal deformity pain is felt in the lower back, buttock, and/or various parts of the leg and foot:**
(A) Sciatica (B) Osteoporosis
(C) Arthritis (D) All of these

59. Which of the following groupings is incorrect?
- (A) Skeletal, striated, voluntary (B) Smooth, unstriated, involuntary
(C) Cardiac, striated, voluntary (D) Cardiac, striated, involuntary
60. The muscle tissue that can be consciously controlled is:
- (A) Smooth (B) Skeletal
(C) Intercalated (D) Cardiac
61. Which condition is shown in following diagram?
- 
- (A) Cleft lip (B) Cleft palate
(C) Incomplete (D) Unilateral complete lip and palate
62. Skeletal muscle is described by all of the following except:
- (A) Striated (B) Voluntary
(C) Cardiac (D) Autorhythmic
63. The walls of digestive tract and blood vessels are made up of this muscle tissue:
- (A) Striated (B) Skeletal
(C) Cardiac (D) Smooth
64. The smallest contractile unit of skeletal muscle is a:
- (A) Sarcomere (B) Motor unit
(C) Synapse (D) Thin filament
65. The major regulatory proteins in muscle tissue are:
- (A) Myosin and tropomyocin (B) Myosin and actin
(C) Actin and troponin (D) Troponin and tropomyocin
66. Muscles that straighten two bones at joints are called extensors. What is the name for muscles that cause two bones to bend at joints?
- (A) Protractors (B) Flexors
(C) Adductors (D) Abductors
67. Which of the following is the best description of cardiac muscle?
- (A) Non-striated – Involuntary (B) Non-striated – Voluntary
(C) Striated – Involuntary (D) Striated – Voluntary

68. The loss of bone density which can cause bones to become light, brittle and easily broken is called:
- (A) Spondylosis (B) Arthritis
(C) Sciatica (D) Osteoporosis
69. Inflammation of the joint is known as:
- (A) Bursitis (B) Arthritis
(C) Both A and B (D) Nephritis
70. A single somatic motor neuron and the group of muscle fibers innervated by it is:
- (A) Somatic unit (B) Motor unit
(C) Associative (D) None of these
71. The bicep and tricep muscles are found in:
- (A) Shank (B) Shoulder
(C) Upper arm (D) Lower jaw
72. During muscular contraction:
- (A) Actin slides past myosin (B) ATP supplies energy
(C) Calcium ions (Ca^{++}) are involved (D) All of these
73. A skeletal muscle cell:
- (A) has light and dark bands (B) has only one nucleus
(C) is under involuntary control (D) None of the above are true
74. The proteins at the junction between sarcomeres form the:
- (A) H zone (B) M line
(C) Z line (D) A band
75. Thick myofilaments are composed of several hundred molecules of a protein known as:
- (A) Actin (B) Myosin
(C) Troponin (D) Tropomyocin
76. Thin myofilaments are composed of two helically of a globular protein know as:
- (A) Actin (B) Mysin
(C) Troponin (D) Tropomyocin

77. **A disk-like protein which is centrally located in sarcomeres is:**
(A) H line (B) M line
(C) Z line (D) I line
78. **Within a sarcomere how many thin filament are arrayed around each thick filament:**
(A) 4 (B) 6
(C) 2 (D) 8
79. **Changes in sarcomere length are caused by the filaments being pulled along the thick filaments in the direction of the:**
(A) H zone (B) M line
(C) Z line (D) I band
80. **Tetany characteristically is considered to be result of a sever degree of:**
(A) Hyperglycemia (B) Hypercalcaemia
(C) Hypocalcaemia (D) Hypoglycemia
81. **The contraction of muscles depends upon:**
(A) Nerve impulse (B) Energy
(C) Calcium (D) All of these
82. **Human eye muscles contract in:**
(A) 0.01 seconds (B) 0.05 seconds
(C) 0.08 seconds (D) All option are incorrect
83. **Bicep muscles are:**
(A) Flexor muscles (B) Extensor muscles
(C) Adductor muscles (D) Abductor muscles
84. **Tricep muscles are:**
(A) Flexor muscles (B) Extensor muscles
(C) Adductor muscles (D) Abductor muscles
85. **A muscle which moves a body part away from the mid line of the body is:**
(A) Flexor muscle (B) Extensor muscle
(C) Adductor muscle (D) Abductor muscle
86. **A muscle which moves a body part towards the mid line of the body is:**
(A) Flexor muscle (B) Extensor muscle
(C) Adductor muscle (D) Abductor muscle

87. In earthworm contraction of which muscles lengthens the body.
 (A) Longitudinal (B) Circular
 (C) Protractor (D) Adductor
88. In earthworm contraction of which muscles shortens the body.
 (A) Longitudinal (B) Circular
 (C) Retractor (D) Abductor
89. The state of physiological inability of a muscle to contract due to accumulation of lactic acid is referred to as:
 (A) Rigor mortis (B) Muscle fatigue
 (C) Muscle tetany (D) Muscle cramp
90. The stationary part of skeletal muscle is known as:
 (A) Origin (B) Insertion
 (C) Belly (D) Ligament
91. The movement in jelly fish is called:
 (A) Belly propulsion (B) Jet propulsion
 (C) Float propulsion (D) None of these
92. Cross bridges form between:
 (A) Troponin and tropomyosin (B) Calcium and sodium
 (C) Sarcolemma and sarcoplasm (D) Myosin head and actin filament
93. The limb bones first appeared in:
 (A) Jawless fishes (B) Lobe finned fishes
 (C) Amphibians (D) Reptiles
94. Select the correct combination for diagram below:



- (A) "A" Myosin, "B" Actin, "C" H-zone
 (B) "A" Myosin "B" Actin, "C" M-lines
 (C) "A" Actin, "B" Myosin, "C" Z-lines
 (D) "A" Troponin, "B" Tropomyosin, "C" Z-lines

- 95. What is the skeletal system?**
- (A) All the bones in the body
 - (B) All the muscles and tendons
 - (C) All the body organs both soft and hard tissue
 - (D) All the bones in the body and the tissue that connect them
- 96. How many bones are there on the average in human body?**
- (A) 33
 - (B) 206
 - (C) 639
 - (D) It varies by the individual
- 97. Which of the following statements is incorrect?**
- (A) Bone is where most blood cells are made.
 - (B) Bone serves as a storehouse for various minerals.
 - (C) Bone is a dry and non-living supporting structure.
 - (D) Bone protects and supports the body and its organs.
- 98. Which bone protects brain?**
- (A) Patella
 - (B) The cranium
 - (C) Sacrum
 - (D) None of these
- 99. Besides the brain, the skull also protects:**
- (A) The lungs
 - (B) The diaphragm
 - (C) The body cells
 - (D) The sense organs
- 100. The purpose of the rib cage is to:**
- (A) Protect the stomach
 - (B) Protect the spinal cord
 - (C) Protect the heart and lungs
 - (D) Provide an object to which the lungs attach
- 101. What makes bones so strong?**
- (A) Silica
 - (B) Cartilage
 - (C) Blood and marrow
 - (D) Calcium and phosphorous
- 102. What is the difference between cartilage and bone?**
- (A) Bone is rubbery, and cartilage is firm
 - (B) Cartilage is rubbery, and bones is firm
 - (C) Bone is a more primitive tissue than cartilage
 - (D) Bone is inside the body, and cartilage is outside

- 103. The hollow space in the middle of bones is filled with:**
- (A) Air (B) Blood
(C) Bone cells (D) Bone marrow
- 104. What is the difference between compact bone and spongy bone?**
- (A) They have different bone marrow
(B) They are made of different materials
(C) They have different sizes of bone cells
(D) They have different arrangement of body cells
- 105. What is a joint?**
- (A) A hinge
(B) A ball and socket
(C) The place where two bones are joined
(D) The place where tendons are fastened together
- 106. Muscles are made of:**
- (A) Silica (B) Polyester threads
(C) Calcium and phosphorous (D) Groups of cell fibres
- 107. How do muscles attached to the bones move the body?**
- (A) Automatically (B) Pull movement only
(C) Push movement only (D) Push and pull movement
- 108. What is the function of a tendon?**
- (A) To link bones to bones
(B) To link muscles to bones
(C) To link muscles to ligaments
(D) To bind the cells in compact bone closer together
- 109. Skeletal muscle is described by all of the following except:**
- (A) Striated (B) Voluntary
(C) Multinucleate (D) Autorhythmic
- 110. The walls of hollow organs and some blood vessels contain this muscle tissue:**
- (A) Striated (B) Skeletal
(C) Cardiac (D) Smooth

- 111. Which of the following is unique to cardiac muscle tissue?**
- (A) Is involuntary (B) Is non-striated
(C) Has intercalated discs (D) Contains smooth muscle tissue
- 112. Approximately what percentage of body heat is generated by muscle tissue?**
- (A) 15% (B) 30%
(C) 55% (D) 85%
- 113. A muscle of fascicle is a?**
- (A) Bundle of myofibrils (B) Bundle of connective tissue
(C) Bundle of muscle fibers (D) Muscle cell
- 114. Which of the following actions is caused by skeletal muscle?**
- (A) Constriction of blood vessels (B) Heartbeat
(C) Dilation of pupil (D) Eye movements
- 115. Which of the following does not occur in a muscle during contraction?**
- (A) Thick and thin filaments bind to each other
(B) Muscle fibers stretch
(C) Thick and thin filaments slide past each other
(D) Muscle fibers shorten
- 116. This process aids in skeletal muscle relaxation after contraction:**
- (A) Calcium is released from intracellular storage sites
(B) Motor neurons send electrical signals to muscles
(C) Acetylcholinesterase degrades acetylcholine
(D) Troponin binds calcium
- 117. The stiffness of muscle tissue in rigor mortis partially results from:**
- (A) Excessive acetylcholine activity on muscle
(B) Excessive calcium release in muscle
(C) Excessive lactic acid build up
(D) Excessive contraction of the fibers
- 118. A single motor neuron may innervate as few as 3-5 fibers in muscles of the:**
- (A) Upper arms (B) Legs
(C) Eye (D) Heart

- 119. When an action potential reaches the presynaptic terminal of the motor neuron then:**
- (A) Calcium is released inside of the muscle fiber
 - (B) Acetylcholine is released into the synaptic cleft
 - (C) Acetylcholinesterase is released into the synaptic cleft
 - (D) Physical contact between the motor neuron and the muscle fiber occurs
- 120. Lack of acetylcholinesterase in the synaptic cleft would result in:**
- (A) Decrease of acetylcholine production by the motor neuron
 - (B) Relaxation of the muscle fiber
 - (C) Excessive, continuous stimulation of the muscle fiber
 - (D) Inability of the motor neuron to stimulate the muscle fiber
- 121. Curare, a toxin, blocks the acetylcholine receptors on muscle tissue. This would result in:**
- (A) Increased stimulation of the muscle fiber
 - (B) Inability of the muscle to respond to motor nerve stimulus
 - (C) Contraction of the muscle fiber
 - (D) Excessive contraction and convulsions
- 122. Training excersizes such as jogging, swimming and aerobics have this effect on skeletal muscle tissue:**
- (A) Increased number of mitochondria per muscle fiber
 - (B) Increased number of muscle fibers
 - (C) Increased number of motor units
 - (D) Increased number of skeletal muscles
- 123. Muscular dystrophy is a congenital disorder characterized by:**
- (A) Skeletal muscle degeneration
 - (B) Excessive convulsions
 - (C) Shaking and trembling
 - (D) Only cardiac damage
- 124. Which of the following disorders is characterized by painful musculoskeletal tender points?**
- (A) Fibromyalgia
 - (B) Myasthenis gravis
 - (C) Duchenne muscular dystrophy
 - (D) Becker muscle dystrophy
- 125. Anabolic steroids have all these effects except:**
- (A) Builds muscle proteins
 - (B) Increases muscle strength
 - (C) Increases number of muscles in the body
 - (D) Can result in liver cancer and heart disease

- 126. Which of the following statements regarding aging and the muscular system is true?**
- (A) Aging is associated with decreased myoglobin production
 - (B) The effects of aging can be nearly completely reversed
 - (C) Satellite cells increase in aging causing fibrosis
 - (D) Young persons have more adipose in muscles compared to elderly persons
- 127. The inactive non-conducting wood is called:**
- (A) Callus
 - (B) Heart wood
 - (C) Cork
 - (D) Sapwood
- 128. The living cells of cartilage are called:**
- (A) Osteoclasts
 - (B) Chondrocytes
 - (C) Osteoblasts
 - (D) Osteocytes
- 129. Hip joint and shoulder joint are examples of:**
- (A) Cartilaginous joint
 - (B) Synovial joint
 - (C) Hinge joint
 - (D) Ball and socket joint
- 130. The atlas and axis vertebrae are located in**
- (A) Cervical region
 - (B) Thoracic region
 - (C) Pelvic region
 - (D) Lumbar region
- 131. Skeletal muscles contain dark bands, which are anisotropic and are called:**
- (A) Z-band
 - (B) A band
 - (C) I band
 - (D) None of these
- 132. Skeletal muscles are composed of:**
- (A) Myosin only
 - (B) Actin only
 - (C) Both actin and myosin
 - (D) Actin, myosin and tropomyosin
- 133. For muscle contraction, ATP requirement is met by:**
- (A) Anaerobic breakdown of fructose into lactic acid
 - (B) Anaerobic breakdown of glucose into lactic acid
 - (C) Aerobic breakdown of fructose into lactic acid
 - (D) Aerobic breakdown of glucose into lactic acid

- 134. The contraction of each muscle is based on:**
- (A) None of above (B) All or no principle
(C) Both (A) and (B) (D) All or one principle
- 135. In birds, sternum is modified to form keel, which is needed for:**
- (A) Attachment of muscle (B) Attachment of organs
(C) Attachment of appendages (D) None of above
- 136. “Effective stroke” following by “recovery stroke” is the mode of locomotion in:**
- (A) Amoeba (B) Paramecium
(C) Jelly fish (D) Euglena
- 137. The acetabulum provides the particular surface for the:**
- (A) Femur (B) Pelvis
(C) Humerus (D) Fibula
- 138. Which of following are digitigrades?**
- (A) Monkey and apes (B) Deer and goat
(C) Man and monkey (D) Rabbit and rodents
- 139. Scapula is connected with sternum by:**
- (A) Carpals (B) None of above
(C) Ribs (D) Clavicle
- 140. The most swift type of locomotion is shown by:**
- (A) Unguligrades (B) Digitigrade
(C) Plantigrades (D) All of above
- 141. During the repair of broken bones, 3rd phase is:**
- (A) Hematoma formations (B) Remodeling
(C) Callus formation (D) Bony callus formation
- 142. “Gliding into wind” of gulls and sea birds is provided by:**
- (A) Short broad wings (B) Long barrow wings
(C) A and b both (D) None of above
- 143. Resistance to decay and insect attack to plants is provided by:**
- (A) Sap wood (B) Callus
(C) Cork (D) Heartwood

- 144. Fibro cartilage is present in:**
- (A) External pinnae of ears and epiglottis
 - (B) Vertebrae
 - (C) Both A and B
 - (D) None of above
- 145. Presence of protoplasts, elastic in nature, without secondary wall have angular thickening in primary wall are characterists of:**
- (A) Vascular cambium cells
 - (B) Collenchyma cells
 - (C) Sclerenchyma cells
 - (D) Xylem cells
- 146. Passive movement of chloroplast by cyclosis is the example of:**
- (A) Phototactic movement
 - (B) Growth movement
 - (C) Chemotactic movement
 - (D) Turgor movement
- 147. Short in size, found in seed coat and nutshells?**
- (A) Sclerides
 - (B) Tracheids
 - (C) Trachea
 - (D) Cambium
- 148. Long cylindrical and bundle caps of xylem:**
- (A) Cambium
 - (B) Tracheids
 - (C) Sclerides
 - (D) Trachea
- 149. Secondary growth:**
- (A) Cambium
 - (B) Tracheids
 - (C) Collenchyma
 - (D) Sclerides
- 150. Long water conducting pipes in xylem:**
- (A) Trachea
 - (B) Collenchyma cells
 - (C) Cambium
 - (D) Sclerides
- 151. Sleep movements:**
- (A) Turgor movement
 - (B) Epinasty
 - (C) Haptonastic
 - (D) Chemotactic
- 152. Movement of sperms of liver worts, mosses and ferns:**
- (A) Epinasty
 - (B) Chemotactic
 - (C) Haptonastic
 - (D) Turgor movement

- 153. More growth in upper surface of leaf as compared to lower surface:**
- (A) Turgor movement (B) Haptonastic
(C) Epinasty (D) Chemotactic
- 154. Axial skeleton:**
- (A) Cardiac muscles
(B) Pectoral and pelvic girdle and appendages
(C) Scapula, supra scapula and clavicle
(D) Skull, vertebrae and rib sternum
- 155. Hyphae of:**
- (A) Epinasty (B) Haptonastic
(C) Chemotropic (D) Turgor movement
- 156. Appendicular skeleton:**
- (A) Pectoral and pelvic girdle and appendages
(B) Scapula, supra scapula and clavicle
(C) Cardiac muscles
(D) Skull, vertebrae and rib sternum
- 157. Striated and involuntary:**
- (A) Cardiac muscles
(B) Skull, vertebrae and rib sternum
(C) Pectoral and pelvic girdle and appendages
(D) Scapula, supra scapula and clavicle
- 158. Visceral, non-striated and involuntary:**
- (A) Pectoral and pelvic girdle and appendages
(B) Skull, vertebrae and rib sternum
(C) Smooth muscles
(D) Cardiac muscles
- 159. Accordion movement:**
- (A) Earthworm (B) Antagonistic muscle pair
(C) Starfish (D) Jelly fish

160. Lever movement:

- (A) Starfish (B) Antagonistic muscle pair
(C) Sarcoplasmic (D) Earthworm

161. Calcium gates:

- (A) Starfish (B) Antagonistic muscle pair
(C) Earthworm (D) All of these

162. Buoyancy:

- (A) Swim bladder (B) Sarcoplasmic reticulum
(C) Antagonistic muscle pair (D) None of these

163. Pseudopodia:

- (A) A.F Huxley (B) Lock jaw
(C) Endoskeleton (D) Amoeba

164. Sliding filament model:

- (A) Lock jaw (B) Endoskeleton
(C) A.F Huxley (D) Amoeba

165. Tetanus:

- (A) A.F Huxley (B) Endoskeleton
(C) Lock jaw (D) Amoeba

Answers

Sr.	Ans.								
1.	(D)	2.	(C)	3.	(C)	4.	(C)	5.	(D)
6.	(A)	7.	(D)	8.	(C)	9.	(C)	10.	(B)
11.	(B)	12.	(A)	13.	(D)	14.	(B)	15.	(A)
16.	(B)	17.	(C)	18.	(D)	19.	(C)	20.	(A)
21.	(C)	22.	(C)	23.	(C)	24.	(D)	25.	(D)
26.	(C)	27.	(C)	28.	(B)	29.	(C)	30.	(D)
31.	(D)	32.	(B)	33.	(B)	34.	(C)	35.	(C)
36.	(B)	37.	(A)	38.	(D)	39.	(C)	40.	(D)
41.	(B)	42.	(C)	43.	(D)	44.	(C)	45.	(A)
46.	(A)	47.	(B)	48.	(C)	49.	(D)	50.	(C)
51.	(A)	52.	(C)	53.	(A)	54.	(A)	55.	(A)
56.	(B)	57.	(C)	58.	(A)	59.	(C)	60.	(B)
61.	(A)	62.	(D)	63.	(D)	64.	(A)	65.	(D)
66.	(B)	67.	(C)	68.	(D)	69.	(B)	70.	(B)
71.	(C)	72.	(D)	73.	(A)	74.	(C)	75.	(B)
76.	(A)	77.	(B)	78.	(B)	79.	(B)	80.	(C)
81.	(D)	82.	(A)	83.	(A)	84.	(B)	85.	(D)
86.	(C)	87.	(A)	88.	(B)	89.	(B)	90.	(A)
91.	(B)	92.	(D)	93.	(C)	94.	(C)	95.	(D)
96.	(B)	97.	(B)	98.	(B)	99.	(D)	100.	(C)
101.	(D)	102.	(B)	103.	(D)	104.	(D)	105.	(C)
106.	(D)	107.	(B)	108.	(B)	109.	(D)	110.	(D)
111.	(C)	112.	(D)	113.	(C)	114.	(D)	115.	(B)
116.	(C)	117.	(B)	118.	(C)	119.	(B)	120.	(C)

Sr.	Ans.								
121.	(B)	122.	(A)	123.	(A)	124.	(A)	125.	(C)
126.	(A)	127.	(B)	128.	(B)	129.	(D)	130.	(A)
131.	(B)	132.	(D)	133.	(B)	134.	(A)	135.	(A)
136.	(B)	137.	(A)	138.	(D)	139.	(D)	140.	(A)
141.	(D)	142.	(B)	143.	(D)	144.	(A)	145.	(B)
146.	(A)	147.	(A)	148.	(B)	149.	(A)	150.	(A)
151.	(A)	152.	(B)	153.	(C)	154.	(D)	155.	(C)
156.	(A)	157.	(A)	158.	(C)	159.	(A)	160.	(B)
161.	(D)	162.	(A)	163.	(D)	164.	(C)	165.	(C)

SCHOOLZ



COORDINATION AND CONTROL

- The name of metabolic processes are interwoven by:**
(A) In coordination (B) Subordination
(C) Coordination (D) All (A), (B) and (C)
- A cell or group of cells specialized to detect changes in the environment and trigger impulses are know as:**
(A) Effectors (B) Receptors
(C) Suppressors (D) (B) and (C)
- The term Auxin was coined by:**
(A) T-yabuta 1970 (B) F.W. Went 1926
(C) Walter 1928 (D) Hoshimata 1910
- You duck your head when a baseball is thrown toward your face. You are responding to:**
(A) An internal stimulus (B) An external stimulus
(C) Hormones (D) All of these
- A plant reponse to touch is called:**
(A) Photoperiodism (B) Geotropism
(C) Thigmotropism (D) Phototropism
- The biological clock is time measuring system which is independent and is:**
(A) Endogenous (B) Exogenous
(C) Both (A) and (B) (D) None of these
- If bio-rhythm occurs with a frequency of 24 hours, it is called:**
(A) Cireadian rhythm (B) Cirea-annual rhythm
(C) Lunar rhythm (D) All of the choices are correct

8. **Photosynthesis and luminescence in algae and dinoflagellates, CO₂ metabolism in Bryophyllum are:**
- (A) Dependent on light and temperature
 - (B) Exogenous in origin
 - (C) Independent of light and temperature
 - (D) All of the choices are correct
9. **The influence of daily cycle of light and darkness on the physiology and behaviour of an organism is known as:**
- (A) Mechanical rhythm
 - (B) Chemoperiodism
 - (C) Photoperiodism
 - (D) Thigmotropism
10. **The synthesis and release of abscisic acid in a plant is response to:**
- (A) Water deficit
 - (B) Oxygen deprivation
 - (C) Salt stress
 - (D) Herbivory
11. **Circadian rhythms are based on approximately a:**
- (A) 2-hour period
 - (B) 7-day period
 - (C) 24-hour period
 - (D) 365-day period
12. **The production of fructants by plants is response to:**
- (A) Water deficit
 - (B) Salt stress
 - (C) Cold stress
 - (D) Heat stress
13. **The formation of air tubes in submerged roots is an adaptation to:**
- (A) Water stress
 - (B) Oxygen deprivation
 - (C) Salt stress
 - (D) Herbivory
14. **Which of the followings describes a plant response to heat stress?**
- (A) Production of heat shock proteins
 - (B) Closing of stomata
 - (C) Production of abscisic acid
 - (D) Production of fructants
15. **The first line of defense against pathogen is:**
- (A) Gene for gene-recognition
 - (B) Production of oligosaccharides
 - (C) Production of phytoalexins
 - (D) Physical barrier of epidermis

- 16. Auxin causes:**
(A) Promotion of apical dominance (B) Formation of adventitious roots
(C) Growth of fruit (D) All of the choices are correct
- 17. In combination with auxin, it stimulates cell division in plants and determines the course of differentiation:**
(A) Ethylene (B) Gibberellins
(C) Abscisic acid (D) Cytokinin
- 18. Foolish seedling disease in rice is caused by:**
(A) Ethylene (B) Gibberellins
(C) Abscisic acid (D) Cytokinin
- 19. One of the most important uses of auxin is the:**
(A) Initiation of abscission (B) Stimulation of abscission
(C) Prevention of abscission (D) Acceleration of abscission
- 20. Abscisic acid:**
(A) Induces bud dormancy (B) Causes the stomata to close
(C) Promotes senescence (D) All of the choices are correct
- 21. Which of the following is weedicide hormone:**
(A) Auxin (B) Gibberellin
(C) Abscisic acid (D) Ethylene
- 22. Gibberellic acid was discovered by:**
(A) Hoshimata and Rappaport (B) Donoho and Walker
(C) Yabuta and Hayashi (D) Litrochet and Dolk
- 23. Plants may be made to grow taller by applying the chemical:**
(A) Dichlorophenoxy acetic acid (B) Trichlorophenoxy acetic acid
(C) Gibbereellic acid (D) Phosphon
- 24. IAA, NAA, and GA are:**
(A) International seed companies (B) Plant pheromones
(C) Spray adjuvants (D) Plant hormones
- 25. Ethene:**
(A) Triggers ripening of fruit (B) Promotes leaf abscission
(C) Initiates flowering (D) All of the choices are correct

- 26. The hormone responsible for delay of senescence is:**
- (A) Ethene (B) Gibberellin
(C) Abscisic acid (D) Cytokinin
- 27. The naturally occurring cytokinin is:**
- (A) Zeatin (B) Kinetin
(C) Nephthalene acetic acid (D) Indole butyric acid
- 28. Gibberellin:**
- (A) Stimulate flowering (B) Promote bud sprouting
(C) Stimulate growth of pollen tube (D) All choices are correct
- 29. Abscisic acid:**
- (A) Is growth inhibitor (B) Produced during adverse conditions
(C) Induces seed dormancy (D) All of the choices are correct
- 30. Which of the following is NOT function of auxin?**
- (A) Induces parthenocarpy (B) Promote apical sominance
(C) Promote abscission (D) All of the choices are correct
- 31. Neurons which make up the nervous system, consist of:**
- (A) An axon (B) 2 or more dendrites
(C) A cell body containing a nucleus (D) All (A), (B) and (C)
- 32. Who send information from the sense organs to the C.N.S?**
- (A) Sensory neurons (B) Motor neurons
(C) Interneurons (D) Neuroglia
- 33. Who send information from the C.N.S. to the effectors?**
- (A) Sensory neurons (B) Motor neurons
(C) Interneurons (D) Neuroglia
- 34. Who connect different neurons together, send information between neurons. Through short dendrites and short axons?**
- (A) Sensory neurons (B) Motor neurons
(C) Interneurons (D) Neuroglia

35. The diagram below represents:

x

w

y

z

- (A) Resting potential (B) Polysynaptic reflex action
(C) Reflex arc (D) Both (B) and (C)

36. Select the correct choice for label x in the diagram below:

A

X

B

- (A) Presynaptic membrane
(B) Post synaptic membrane
(C) Synaptic cleft with neurotransmitters
(D) Motor-end plate

37. The very small gap between an axon sending a message and dendrite receiving the message is the:

- (A) Axon terminal (B) Receptor
(C) Synapse (D) Effector

38. Which part of neuron carries the signals away from the soma?

- (A) Axon (B) Dendrite
(C) Transmitter (D) Synapse

- 39. The neurons of CNS that form myelin sheath, provide nutrition and are involved in phagocytic activity are known as:**
- (A) Sensory neurons (B) Motor neurons
(C) Interneurons (D) Neuroglia
- 40. It is an automatic neuromuscular action elicited by a defined stimulus:**
- (A) Voluntary action (B) Reflex action
(C) Motor action (D) All of the choices are correct
- 41. A reflex action involving one or more interneurons between sensory and motor neuron is termed as:**
- (A) Monosynaptic reflex (B) Polysynaptic reflex
(C) Hemisynaptic reflex (D) None of these
- 42. Which of the ions are most abundant on the inside and outside of the neuron at its resting potential?**
- (A) Potassium; sodium (B) Sodium; potassium
(C) Calcium; phosphate (D) Sulphate; potassium
- 43. When a neuron reaches at action potential, it depolarizes in:**
- (A) Second (B) Millisecond
(C) Microsecond (D) Nanosecond
- 44. Nerve impulses always travel to the brain through _____ fibers.**
- (A) Interneuron fibers (B) Dendrite fibers
(C) Axon fibers (D) Motor fibers
- 45. Which of these is true when a neuron is at rest?**
- (A) The outside is positive (B) The outside is negative
(C) There is no voltage (D) The inside is positive
- 46. The typical neuronal resting membrane potential measures between:**
- (A) -40 mv to -80 mv (B) -30 mv to -80 mv
(C) -40 mv to -90 mv (D) -40 mv to -70 mv
- 47. Influx of which ion causes depolarization of the membrane, as the first phase of the action potential?**
- (A) K^+ (B) Na^+
(C) K^+ and Na^+ (D) Ca^+

- 48. Diffused nervous system is present in which animal?**
(A) Asymmetrical (B) Bilaterally symmetrical
(C) Radially symmetrical (D) All (A), (B) and (C)
- 49. Central nervous system is present in which animal?**
(A) Asymmetrical (B) Bilaterally symmetrical
(C) Radially symmetrical (D) All (A), (B) and (C)
- 50. How many interneurons does the CNS contain approximately?**
(A) 1 trillion (B) 100 trillion
(C) 1 million (D) 100 billion
- 51. The brain stem is composed of:**
(A) The spinal cord, axon, vertebra (B) The cerebrum, cerebellum, pons
(C) The medulla, pons, mid brain (D) The thalamus, mid brain, pons
- 52. Nerve cells can send messages faster if they have:**
(A) Many chromosomes (B) Non-myelinated axons
(C) Many dendrites (D) Myelinated axon
- 53. Which part of the brain is the seat of conscious activities?**
(A) Limbic brain (B) Brain stem
(C) Cerebral cortex (D) Occipital
- 54. A large number of bundle fibers that connect the left and right cerebral hemispheres is:**
(A) Lateral sulcus (B) Broca's area
(C) Corpus callosum (D) Ventral sulcus
- 55. The diencephalon consists of:**
(A) Thalamus and hypothalamus (B) Pons and medulla
(C) Hypothalamus and limbic system (D) Thalamus and limbic system
- 56. When your finger accidentally gets caught in a door, the pain message is sent to your brain through:**
(A) Medulla oblongata (B) Motor nerve
(C) Sensory receptors (D) Caffeine

57. Which of these is the large part of your brain?
- (A) The cerebellum (B) The cerebrum
(C) The medulla (D) The pons
58. The division of the peripheral nervous system that regulates your heart beat is:
- (A) The somatic system (B) The muscular system
(C) The autonomic system (D) The skeletal system
59. The material in the brain and spinal cord which contains the axons and myelin sheathes of nerve cells is:
- (A) White matter (B) Gray matter
(C) Yellow matter (D) None of these
60. The material in the brain and spinal cord which contains the cell bodies and dendrite of nerve cells is?
- (A) Gray matter (B) White matter
(C) Brown matter (D) Yellow matter
61. In which portion of the spinal cord do the interneurons lie?
- (A) Cervical enlargement (B) Lumbar enlargement
(C) Gray matter (D) White matter
62. The embryonic hindbrain gives rise to which structures in the brain?
- (A) Cerebrum and basal ganglia
(B) Diencephalon
(C) Midbrain
(D) Cerebellum, pons and medulla oblongata
63. Which portion of the brain maintains homeostasis by linking activities of the endocrine and nervous system together?
- (A) Thalamus (B) Hypothalamus
(C) Pons (D) Medulla oblongata
64. Which of these nuclei is not located entirely within the medulla oblongata?
- (A) Cardiac center (B) Respiratory center
(C) Vasomotor center (D) Reticular formation

- 65. Which structures would not be innervated by the sympathetic nervous system?**
- (A) Skeletal muscles (B) Glands
(C) Smooth muscles (D) Cardiac muscles
- 66. Which term should be last in the reflex sequence?**
- (A) Sensory neuron (B) Motor neuron
(C) Effector (D) Receptor
- 67. Parkinson disease tremors are the result of which condition?**
- (A) Dopamine excess (B) Norepinephrine deficiency
(C) Epinephrine excess (D) Dopamine deficiency
- 68. The centers for thermoregulation, osmoregulation, are located in:**
- (A) Thalamus (B) Hypothalamus
(C) Amygdala (D) Hippocampus
- 69. Which brain area acts to screen all incoming sensory data?**
- (A) Thalamus (B) Hypothalamus
(C) Cerebral cortex (D) Cerebellum
- 70. Which brain area coordinates skeletal muscle movements?**
- (A) Thalamus (B) Hypothalamus
(C) Amygdala (D) Cerebellum
- 71. It is involved in sleeping and waking:**
- (A) Thalamus (B) Brain stem
(C) Hippocampus (D) Cerebellum
- 72. Peripheral nervous system in man consists of:**
- (A) 31 spinal and 12 cranial nerve pairs
(B) 33 spinal and 12 cranial nerve pairs
(C) 12 spinal and 31 cranial nerve pairs
(D) 31 spinal and 31 cranial nerve pairs
- 73. They detect sound, motion, position in relation to gravity, touch, pressure:**
- (A) Chemoreceptors (B) Photoreceptors
(C) Mechanoreceptors (D) Nociceptors

- 74. What kind of nociceptors are the skin receptors?**
- (A) Free nerve ending (B) Spray nerve endings
(C) Blind nerve ending (D) Encapsulated nerve ending
- 75. What kind of meissner corpuscle and pacinian corpuscle are the skin receptors?**
- (A) Free nerve ending (B) Hot
(C) Cold (D) Encapsulated nerve ending
- 76. The receptors which note the changes in blood pressure are:**
- (A) Caloreceptors (B) Frigidoreceptors
(C) Baroreceptors (D) Nociceptors
- 77. Dorsal root of spinal cord is:**
- (A) Sensory (B) Motor
(C) Mixed (D) All (A), (B) and (C)
- 78. The branch of the autonomic nervous system that induces the “flight or fight” response is the:**
- (A) Sympathetic (B) Parasympathetic
(C) Vagus nerve (D) Somatic nerve
- 79. Nicotine:**
- (A) Reduces fatigue (B) Raises blood pressure
(C) Increases alertness (D) All of the choices are correct
- 80. Parkinson’s disease is characterized by:**
- (A) Nicotin (B) Acetylcholine
(C) Serotonin (D) Dopamine
- 81. Alzheimer disease (AD), is a progressive, degenerative brain disease. Its symptoms include:**
- (A) Dementia (B) Hallucination
(C) Delusions (D) All (A), (B) and (C)
- 82. Endocrine glands typically:**
- (A) Are ductless (B) Release enzymes
(C) Release neurotransmitters (D) Release their contents out of the body

- 83. Islets of Langerhans are found in the:**
- (A) Thyroid (B) Thymus
(C) Pancreas (D) Pituitary
- 84. Cortisol is released from the:**
- (A) Parathyroid (B) Adrenal cortex
(C) Hypothalamus (D) Posterior pituitary
- 85. Calcium is released from bone into the bloodstream due to the action of:**
- (A) ADH (B) GnRH
(C) LH (D) PTH
- 86. Aldosterone is produced by which gland that causes reabsorption:**
- (A) Thyroid; sodium (B) Pituitary; water
(C) Adrenal; sodium (D) Thymus; white blood cells
- 87. Blood calcium is lowered by the hormone:**
- (A) Calcitonin (B) Glucagon
(C) Adrenalin (D) Thyroxine
- 88. An oversecretion of GH (or STH) would lead to:**
- (A) Goiter (B) Diabetes
(C) Infertility (D) Gigantism
- 89. Which pair of hormones act antagonistically?**
- (A) Glucagon and Cortisol (B) Insulin and Adrenalin
(C) Glucagon and insulin (D) Glucagon and Adrenalin
- 90. This hormone would be at an increased level in a mother who is breast feeding:**
- (A) Thyroxine (B) Prolactin
(C) Aldosterone (D) Insulin
- 91. Compared to neurotransmitters, hormones act:**
- (A) Faster (B) On fewer cells
(C) For a shorter period of time (D) Over longer distances

- 92. Hormones are made from:**
- (A) Amino acids (B) Modified amino acids
(C) Steroid (D) All of the choices are correct
- 93. As the sun comes up in the morning your blood level of what goes down and you wake up.**
- (A) Melatonin (B) Cortisol
(C) Glucagon (D) Adrenalin
- 94. Which hormone is most commonly associated with the “fight or flight” response to stress?**
- (A) Insulin (B) Adrenalin
(C) Calcitonin (D) Prolactin
- 95. These two hormones are produced by the hypothalamus but stored in the posterior pituitary:**
- (A) Insulin and glucagon (B) ADH and oxytocin
(C) Growth hormone and prolactin (D) Thymosin and adrenalin
- 96. This hormone from the hypothalamus stimulates release of ACTH from the anterior pituitary:**
- (A) STHRRH (B) TRH
(C) CRH (D) ACTH
- 97. Thyroxin (or thyroid hormone) travels through the bloodstream acting on many target cells to increase:**
- (A) Blood sugar (B) Blood calcium
(C) Metabolism (D) Anti-inflammatory reactions
- 98. The major target for ACTH is the:**
- (A) Pancreas (B) Thyroid
(C) Liver (D) Adrenal
- 99. Too much ACTH release causes hyperglycemia (high blood sugar) could also cause:**
- (A) Increased blood pressure (B) Increased blood calcium
(C) Decreased body temperature (D) Decreased metabolism
- 100. A patient suffering from dwarfism is most likely deficient in:**
- (A) ADH (B) PTH
(C) STH (D) GnRH

- 101. A patient that is losing weight and suffering from an increased body temperature could be hypersecreting:**
- (A) Thyroxin (B) PTH
(C) STH (D) GnRH
- 102. Hormones that enter target cells and bind to receptors in the cytoplasm and then enter the nucleus are called:**
- (A) Steroid hormones (B) Water soluble hormones
(C) Peptide hormones (D) Second messengers
- 103. All of the following are hormones of the anterior pituitary except:**
- (A) Human growth hormone (GH) (B) Follicle-stimulating hormone (FSH)
(C) Parathyroid hormone (PTH) (D) Thyroid-stimulating hormone (TSH)
- 104. The gland which can be classified as an endocrine and an exocrine gland is the:**
- (A) Thyroid (B) Thymus
(C) Pancreas (D) Pituitary
- 105. Excess level of cortisol results in:**
- (A) Addison disease (B) Cretinism
(C) Cushing syndrome (D) Diabetes insipidus
- 106. Hormone responsible for differentiation of Tlymphocytes is:**
- (A) Cortisol (B) Melatonin
(C) Thyroxin (D) Thymosin
- 107. A 30 years old male complains of being over weight, sluggish in nature, hair loss, dry skin and intolerance of cold, he is suffering from :**
- (A) Cretinism (B) Myxedema
(C) Addison disease (D) Huntington disease
- 108. The study of the natural history of animal behavior is:**
- (A) Etiology (B) Psychology
(C) Ethology (D) Parapsychology
- 109. Learning to not responding to a stimulus is called:**
- (A) Imprinting (B) Sensitization
(C) Kinesis (D) Habituation

- 110. A “skinner box” is used for experiments in:**
- (A) Operant conditioning (B) Classical conditioning
(C) Migration (D) Aggression
- 111. A sensitive phase and critical period are associated with what type of behavior:**
- (A) Kinesis (B) Taxis
(C) Imprinting (D) Habituation
- 112. Dog salivating at the ringing of a bell is associated with what type of behavior:**
- (A) Classical conditioning (B) Operant conditioning
(C) Imprinting (D) Habitation
- 113. Humans ignoring night sounds while asleep is an example of:**
- (A) Classical conditioning (B) Operant conditioning
(C) Imprinting (D) Habituation
- 114. A rat in a box learns to associate pressing a lever with obtaining food:**
- (A) Operant conditioning (B) Classical conditioning
(C) Imprinting (D) Aggression
- 115. An example of learned behavior is:**
- (A) Operant conditioning (B) Classical conditioning
(C) Latent learning (D) All (A), (B) and (C)
- (116) The term imprinting was coined by:**
- (A) Konard Lorenz (B) Ernest Haeckel
(C) Schwarz (D) T. H. Morgan
- 117. Fixed action pattern (FAP) is stereotype behavior that is triggered by an external sensory stimulus as:**
- (A) Response chain (B) Endogenous releaser
(C) Sign stimulus (D) All (A), (B) and (C)
- 118. Increased response to an increase in stimulus intensity is called:**
- (A) Positive phototaxis (B) Kinesis
(C) Negative phototaxis (D) Luminis

- 119. The animals which are active at dusk or dawn are termed as:**
- (A) Nocturnal (B) Diurnal
(C) Crepuscular (D) Arboreal
- 120. The set point of glucose blood level in your body is:**
- (A) 90 mg / 100 ml (B) 50 mg / 100 ml
(C) 30 mg / 100 ml (D) 40 mg / 100 ml
- 121. If plants are grown without light, they become extremely long and fail to form chlorophyll. They are said to be:**
- (A) Callus (B) Chlorotic
(C) Galls (D) Etiolated
- 122. Which of the following is not a function of auxins?**
- (A) Promote stomatal opening
(B) Promote apical dominance and fruit growth
(C) Promote cell division in cambium
(D) Cause delay in leaf senescence
- 123. Nociceptors produce the sensation of:**
- (A) Taste (B) Pain
(C) Hearing (D) Light
- 124. Receptors of the following senses are present in the skin:**
- (A) Heat, cold and pain (B) Touch, pressure, cold, heat and pain
(C) Touch, pressure and pain (D) Touch and pressure
- 125. The cytoplasmic processes conducting impulses away from cell body of neuron are termed as:**
- (A) Dendrites (B) Myelin
(C) Axon (D) Synapse
- 126. Which of the following ions present in the nerve cells and surrounding fluid are the most important in conduction of nerve impulse?**
- (A) Na^+ and K^+ (B) Na^+ and Mg^{++}
(C) K^+ and Mg^{++} (D) Mg^{++} and Ca^{++}
- 127. Which of the following is an example of neurotransmitter?**
- (A) Dopamin (B) Serotonin
(C) Acetylcholine (D) All of the above

- 128. In human, forebrain is further divided into:**
(A) Thalamus and limbic system (B) Cerebrum, limbic system and thalamus
(C) Thalamus and cerebrum (D) Cerebrum and limbic system
- 129. In humans, amygdala, hippocampus and nearby region of cerebrum:**
(A) Thalamus, amygdala, hippocampus and nearby region of cerebrum
(B) Thalamus, amygdala, hippocampus and nearby region of cerebrum
(C) Thalamus, hypothalamus and hippocampus
(D) Thalamus, hypothalamus and amygdala
- 130. Which of the following is a controlling function of hypothalamus?**
(A) Swallowing (B) Vision
(C) Memory (D) Water balance
- 131. Which of the following is not a function of sympathetic system?**
(A) Dilates the branches (B) Accelerates the heart beat
(C) Inhibits the digestive tract (D) Contracts the pupils
- 132. Chemically, cortisone is:**
(A) A protein (B) A poly peptide
(C) An amino acid (D) A steroid
- 133. Excessive secretion of somatotrophin releasing factor during early life leads to:**
(A) Grave disease (B) Epilepsy
(C) Alzheimer disease (D) Acromegaly
- 134. Addison disease is caused by excessive secretion of:**
(A) Antidiuretic hormone (B) Adrenocorticotrophic hormone
(C) Luteinising hormone (D) Melanophore stimulating hormone
- 135. β cells of pancreas secrete:**
(A) Trypsin (B) Glucagon
(C) Insulin (D) Lipase
- 136. Insulin depresses blood glucose levels by:**
(A) Increasing glycogen synthesis
(B) Increasing cell utilization of glucose
(C) Both A and B
(D) Stimulating conversion of glucose into lipids and proteins

- 137. Which of the following is not a function of progesterone?**
- (A) Development of secondary sexual characters in females
 - (B) Prevention of ripening of follicles
 - (C) Suppressing ovulation
 - (D) Thickening and visualization of uterine wall
- 138. Which of the following is not a similarity between nervous and chemical coordination?**
- (A) Both help in co-ordination of body
 - (B) Both release messenger chemicals in extra cellular spaces of the body
 - (C) Both are homeostatic in function
 - (D) Both show response to a stimulus instantly
- 139. Who performed the experiment of conditioning the dogs to secrete saliva on ringing of bells?**
- (A) Kohler
 - (B) Uexkull
 - (C) Pavlov
 - (D) Lorenz
- 140. Which of the following ions is conserved by aldosterone by preventing its loss from kidney tubules?**
- (A) Na^+
 - (B) Ca^{++}
 - (C) Mg^{++}
 - (D) K^+
- 141. Brain:**
- (A) Hydra
 - (B) Planaria
 - (C) Auditory relay centre
 - (D) 12 pairs
- 142. Mid-brain:**
- (A) 12 pairs
 - (B) Auditory relay centre
 - (C) Planaria
 - (D) Hydra
- 143. Cranial nerves:**
- (A) Planaria
 - (B) Auditory relay centre
 - (C) 12 pairs
 - (D) Hydra
- 144. L-dopa:**
- (A) Hydra
 - (B) Auditory relay centre
 - (C) Planaria
 - (D) Parkinson disease

145. Chlorosis:

- (A) Ethene (B) Ridges of fingertips
(C) Short supply of minerals in soil (D) Pain

146. Ethene:

- (A) Short supply of minerals in soil (B) Ridges of fingertips
(C) Pain (D) Breaks bud dormancy

147. Mechano receptors:

- (A) Equilibrium (B) Short supply of minerals in soil
(C) Pain (D) Ridges of fingertips

148. Meissner's corpuscles:

- (A) Breaks bud dormancy (B) Ridges of fingertips
(C) Pain (D) Short supply of minerals in soil

149. Thyroid gland:

- (A) Calcinotonin (B) Water retention by kidneys
(C) Sugar in urine (D) Kinesis

150. Gastrin:

- (A) Water retention by kidneys (B) Sugar in urine
(C) Stomach (D) Kinesis

151. Orientation behaviour:

- (A) Kinesis (B) Water retention by kidneys
(C) Calcinotonin (D) Sugar in urine

152. Diabetes mellitus:

- (A) Water retention by kidneys (B) Sugar in urine
(C) Kinesis (D) Stomach

153. Adrenaline:

- (A) Milk production (B) Muscles
(C) Neurotransmitter (D) Involuntary

154. Reflex action:

- (A) Milk production (B) Muscles
(C) Follicle development (D) Involuntary

- 155. Effectors:**
- (A) Follicle development (B) Milk production
(C) Neurotransmitter (D) Muscles
- 156. Prolactin:**
- (A) Involuntary (B) Milk production
(C) Muscles (D) Neurotransmitter
- 157. Back of brain below occipital lobe. Balance, coordination, movement:**
- (A) Brain (B) Dendrites
(C) Taste buds (D) Cerebellum
- 158. The path along which the olfactory receptors send their electrical message to the brain:**
- (A) Inhibitory signals (B) Olfactory tract
(C) Receptor sites (D) Taste buds
- 159. Left and right hemispheres. Social interactions:**
- (A) Cerebrum / cerebral cortex (B) Temporal lobes
(C) Central nervous system (D) Receptor sites
- 160. The space between two neurons through which neurotransmitters travel:**
- (A) Habits (B) Brain
(C) Dendrites (D) Synapse
- 161. Part of the central nervous system that contains interferon's and connects the brain with the rest of the body:**
- (A) Frontal lobes (B) Synapse
(C) Spinal cord (D) Temporal lobes
- 162. The most basic function of the nervous system is:**
- (A) Stimulation (B) Reception
(C) Conduction (D) Inhibition
- 163. The nervous system is involved in:**
- (A) Conduction (B) Stimulation
(C) Reception (D) All of the above

- 164. The spinal cord is part of:**
- (A) Brain (B) Central Nervous System
(C) Peripheral Nervous System (D) Somatic division
- 165. Which of the following is most fundamental in the diverse function of every part of the entire nervous system?**
- (A) Peripheral Nervous System (B) Afferent
(C) Efferent (D) Nervous impulse
- 166. A branch from the body of a neuron, which usually receives information:**
- (A) Neurilemma (B) Proneuron fiber
(C) Soma (D) Dendrite
- 167. A branch from the body of a neuron, which usually carries information away from its cell body, is:**
- (A) Axon (B) Dendrite
(C) Ganglion (D) Proneuron fiber
- 168. The transmitting region of a motor neuron is:**
- (A) Dendrite (B) Soma
(C) Neurolemma (D) Axon ending
- 169. A Schwann cell can form myelin around how many axon segments (between nodes):**
- (A) Only one
(B) More than one, but no set number
(C) More than one, but only on the same axon
(D) More than one, but with each on a different axon
- 170. A neuron with its axon connected to another neuron and its dendrites connected to a receptor:**
- (A) Sensory (B) Motor
(C) Association (D) Unipolar
- 171. A neuron with its dendrites connected to another neuron and its axon connected to an effector organ is:**
- (A) Sensory (B) Motor
(C) Association (D) Sympathetic

- 172. A neuron whose dendrite is connected with a receptor and whose axon is connected with other neurons is termed:**
- (A) Unipolar (B) Association
(C) Motor (D) Sensory
- 173. Which of the following neurons would only be found in the Central Nervous System?**
- (A) Afferent (B) Multipolar
(C) Facilitated (D) Association
- 174. A neuron with one axon and one dendrite would be:**
- (A) Unipolar
(B) Bipolar
(C) In the Peripheral Nervous System only
(D) Multipolar
- 175. A neuron with one axon and 25 dendrites would be:**
- (A) Unipolar
(B) Bipolar
(C) In the Central Nervous System only
(D) Multipolar
- 176. Microglia:**
- (A) Form cerebrospinal fluid
(B) Only attach to capillaries to support neurons
(C) Are phagocytic
(D) Form the myelin of Central Nervous System neurons
- 177. Astroglia (astrocytes):**
- (A) Form cerebrospinal fluid.
(B) Support neurons, by attaching to them and to capillaries.
(C) Are phagocytic.
(D) Form the myelin of Central Nervous System axons.
- 178. The nervous system is involved in which of the following:**
- (A) Reception (B) Secretion
(C) Stimulation (D) All of the above

- 179.** A Central Nervous System neuron whose dendrite is connected with a higher part of the brain or spinal cord, and whose axon is connected with a lower area is termed:
- (A) Sensory (B) Motor
(C) Afferent (D) Sympathetic
- 180.** A neuron with only one projection from its body, which later splits into a functional axon dendrite is termed:
- (A) Bipolar (B) Multipolar
(C) Unipolar (D) Apolar
- 181.** Gray matter in the Central Nervous System is termed:
- (A) Nucleus (B) Ganglion
(C) Tract (D) Nerve
- 182.** The ability to respond to environmental stimulation in a direct way, resulting in useful cellular alterations:
- (A) Somatic (B) Irritability
(C) Secretion (D) Conductivity
- 183.** White matter in the Central Nervous System is termed:
- (A) Nucleus (B) Ganglion
(C) Tract (D) Nerve
- 184.** The function of oligodendroglia is:
- (A) Phagocytosis
(B) Secretion of cerebrospinal fluid
(C) To form a connective tissue-like outer covering around ganglia
(D) Identical with that of Schwann cells of the Peripheral Nervous System
- 185.** A Central Nervous System neuron whose dendrite is connected with a lower part of the brain or spinal cord, and whose axon is connected with a higher, is termed:
- (A) Sensory (B) Motor
(C) Association (D) Sympathetic
- 186.** The nervous system's overall contribution to the body:
- (A) Integration of all systems (B) Coordination of all systems
(C) Both integration and coordination (D) Secretion

- 187. Which of the following is not capable of impulse conduction?**
- (A) Schwann cell (B) Epidermal cell
(C) Microglia (D) All of the above are non-impulse conductors
- 188. All of the functions of the nervous system are basically accomplished by:**
- (A) Conduction of impulses (B) Stimulation
(C) Inhibition (D) Reception
- 189. Besides the nervous system, the body's other principal integrating and coordinating system is:**
- (A) Digestive (B) Integumentary
(C) Endocrine (D) Reproductive
- 190. A nerve controlling the contraction of the left biceps brachii muscle would be classified as a part of:**
- (A) Spinal cord
(B) A ganglion
(C) Central nervous system
(D) Somatic division of the peripheral nervous system
- 191. In the Central Nervous myelin is formed by:**
- (A) Axons (B) Dendrites
(C) Microglia (D) Oligodendroglia
- 192. All of the following are part of a neuron, except:**
- (A) Astroglia (B) Soma
(C) Dendrite (D) End bulb
- 193. A nerve to the heart would be classified as a part of:**
- (A) Spinal cord
(B) A ganglion
(C) Non-nervous auxiliary system
(D) Somatic division of the peripheral nervous system
- 194. A ganglion is part of:**
- (A) Peripheral Nervous System
(B) Every sense organ
(C) The non-nervous cellular around all axons
(D) None of the above

- 195. A neuron with one dendrite and 25 axon would be:**
- (A) Unipolar (B) Bipolar
(C) Multipolar (D) Bidecimpentacular
- 196. Sensory functions deal with:**
- (A) Inhibition (B) Receptors
(C) Glands (D) Muscles
- 197. Astroglial cells:**
- (A) Form cerebrospinal fluid (B) Form the myelin of CNS neurons
(C) Are phagocytic (D) Form a part of the blood-brain barrier
- 198. The hormone involve in birth is:**
- (A) Prolactin (B) Oxytocin
(C) Calcitonin (D) Thyroxin
- 199. Cranial nerves are a part of:**
- (A) Brain (B) Somatic division
(C) Autonomic division (D) CND
- 200. Conductivity is based upon which universal protoplasmic quality of living things:**
- (A) Growth (B) Irritability
(C) Reproduction (D) Energy input
- 201. A Central Nervous neuron whose dendrites are connected with a sensory neuron and whose axon is connected with a motor neuron is termed:**
- (A) Sensory (B) Motor
(C) Association (D) Auxiliary
- 202. The highest part of the nervous system is:**
- (A) Diencephalon (B) Medulla oblongata
(C) Cerebral cortex (D) Dorsal root ganglia of thoracic nerves
- 203. What is the point of separation between adjacent sheathing cells?**
- (A) Ganglion (B) Soma
(C) Node of fanvier (D) Axon ending

- 204. Which of the followings is a neuron that interconnects different types of other neurons?**
- (A) Motor (B) Sensory
(C) Astroglial (D) Association
- 205. Which hormone works antagonistically to parathormone?**
- (A) Tri-iodothyronine (B) Insulin
(C) Estrogen (D) Calcitonin
- 206. The pituitary gland is controlled by the:**
- (A) Anterior lobe (B) Hypothalamus
(C) Posterior lobe (D) Frontal cortex
- 207. Choose the pair of hormones that have antagonistic effects on blood sugar levels:**
- (A) Calcitonin and PTH (B) Adrenalin and glucagon
(C) Glucagon and glucose (D) ADH and aldosterone
- 208. The pancreas produces which 2 hormones:**
- (A) Insulin and glucagon (B) Adrenaline and nor-adrenaline
(C) T₃ and T₄ (D) STH and ACTH
- 209. Hypersecretion of Thyroxin would be caused by an increase in the release of:**
- (A) FSH or LH (B) STHRH or STH
(C) TSH or ACTH (D) TRH or TSH
- 210. Which hormone is produced in the Beta cells of the islets of Langerhans?**
- (A) Melatonin (B) Glucagon
(C) Insulin (D) Calcitonin
- 211. Who control the secretions of anterior lobe of pituitary gland?**
- (A) In the Hypothalamus (B) In the Adrenal Gland
(C) In the Pancreas (D) In the Parathyroid
- 212. What is the role of progesterone hormone in women?**
- (A) Follicle development (B) Development of the uterine lining
(C) Spermatogenesis (D) Female secondary sex characteristics

- 213. Glands in the endocrine system:**
- (A) Produce hormones that are secreted into the digestive tract
 - (B) Release hormones into the bloodstream or the fluid around cells
 - (C) Release hormones as rapidly as nerve impulses are transmitted
 - (D) None of the above
- 214. The pineal gland has been implicated in the disorder:**
- (A) Diabetes mellitus
 - (B) Hypothyroidism
 - (C) Seasonal affective disorder (SAD) syndrome
 - (D) None of the above
- 215. The hypothalamus has a dual function in that it:**
- (A) Sends nerve impulses and also makes hormones
 - (B) is both a nervous and olfactory organ
 - (C) belongs to both the nervous and circulatory systems
 - (D) is found connected to both kidneys
- 216. Which of the followings is mismatched?**
- (A) Oxytocin – hypothalamus
 - (B) Insulin – pancreas
 - (C) Glucagon – pancreas
 - (D) Thyroid hormone – pituitary gland
- 217. During emergencies, the “fight-or-flight” response:**
- (A) Decrease the heartrate
 - (B) is caused by hormone secretions in the adrenal medulla
 - (C) is stimulated by cortisol
 - (D) is the result of aldosterone causing faster blood flow
- 218. The body’s normal metabolic rate is regulated by:**
- (A) Thyroid hormones
 - (B) Epinephrine
 - (C) Metaboloxin
 - (D) Prolactin
- 219. Excessive production of thyroid hormones by the thyroid gland:**
- (A) is called hypothyroidism
 - (B) can cause nervousness, irregular heartbeat, and weight loss
 - (C) can cause stunted growth and retardation in children
 - (D) can cause a goiter

Answers

Sr.	Ans.								
1.	(C)	2.	(B)	3.	(B)	4.	(B)	5.	(C)
6.	(A)	7.	(A)	8.	(C)	9.	(C)	10.	(A)
11.	(C)	12.	(C)	13.	(B)	14.	(A)	15.	(D)
16.	(D)	17.	(D)	18.	(B)	19.	(C)	20.	(D)
21.	(A)	22.	(C)	23.	(C)	24.	(D)	25.	(D)
26.	(D)	27.	(A)	28.	(D)	29.	(D)	30.	(C)
31.	(D)	32.	(A)	33.	(B)	34.	(C)	35.	(C)
36.	(C)	37.	(C)	38.	(A)	39.	(D)	40.	(B)
41.	(B)	42.	(B)	43.	(B)	44.	(C)	45.	(A)
46.	(C)	47.	(B)	48.	(C)	49.	(B)	50.	(D)
51.	(C)	52.	(D)	53.	(C)	54.	(C)	55.	(D)
56.	(C)	57.	(B)	58.	(C)	59.	(A)	60.	(A)
61.	(C)	62.	(D)	63.	(B)	64.	(D)	65.	(A)
66.	(C)	67.	(D)	68.	(B)	69.	(A)	70.	(D)
71.	(B)	72.	(A)	73.	(C)	74.	(A)	75.	(D)
76.	(C)	77.	(A)	78.	(A)	79.	(D)	80.	(D)
81.	(D)	82.	(A)	83.	(C)	84.	(B)	85.	(D)
86.	(C)	87.	(A)	88.	(D)	89.	(C)	90.	(B)
91.	(C)	92.	(D)	93.	(A)	94.	(B)	95.	(B)
96.	(C)	97.	(C)	98.	(D)	99.	(A)	100.	(C)
101.	(A)	102.	(A)	103.	(C)	104.	(C)	105.	(C)
106.	(D)	107.	(B)	108.	(C)	109.	(D)	110.	(A)
111.	(C)	112.	(A)	113.	(D)	114.	(A)	115.	(D)
116.	(A)	117.	(C)	118.	(B)	119.	(C)	120.	(A)

Sr.	Ans.								
121.	(D)	122.	(A)	123.	(B)	124.	(B)	125.	(C)
126.	(A)	127.	(D)	128.	(B)	129.	(B)	130.	(D)
131.	(D)	132.	(D)	133.	(D)	134.	(D)	135.	(C)
136.	(C)	137.	(A)	138.	(D)	139.	(C)	140.	(A)
141.	(B)	142.	(B)	143.	(C)	144.	(D)	145.	(C)
146.	(D)	147.	(A)	148.	(B)	149.	(A)	150.	(C)
151.	(A)	152.	(B)	153.	(C)	154.	(D)	155.	(D)
156.	(B)	157.	(D)	158.	(B)	159.	(A)	160.	(D)
161.	(C)	162.	(C)	163.	(D)	164.	(B)	165.	(D)
166.	(D)	167.	(A)	168.	(D)	169.	(A)	170.	(A)
171.	(B)	172.	(D)	173.	(D)	174.	(A)	175.	(D)
176.	(B)	177.	(A)	178.	(D)	179.	(B)	180.	(B)
181.	(A)	182.	(D)	183.	(D)	184.	(C)	185.	(C)
186.	(B)	187.	(D)	188.	(A)	189.	(C)	190.	(A)
191.	(D)	192.	(A)	193.	(B)	194.	(D)	195.	(D)
196.	(B)	197.	(B)	198.	(B)	199.	(A)	200.	(B)
201.	(C)	202.	(C)	203.	(C)	204.	(D)	205.	(D)
206.	(B)	207.	(B)	208.	(A)	209.	(C)	210.	(C)
211.	(A)	212.	(B)	213.	(B)	214.	(C)	215.	(A)
216.	(D)	217.	(B)	218.	(A)	219.	(B)		

SCHOOLZ



REPRODUCTION

- 1. What is/are basis for asexual reproduction?**
(A) Mitosis (B) Meiosis
(C) Sex hormones (D) All (A), (B) and (C)
- 2. What is advantage of asexual reproduction?**
(A) Organisms increases rapidly (B) Organisms are morphologically alike
(C) Organisms are genetically alike (D) All (A), (B) and (C)
- 3. What is advantage of sexual reproduction?**
(A) Genetically varied individuals are born
(B) Chances of survival increases
(C) Chances of evolution increases
(D) All (A), (B) and (C)
- 4. Natural methods of asexual reproduction in plants is/are:**
(A) Spores (B) Vegetative propagation
(C) Apomixis (D) All (A), (B) and (C)
- 5. Artificial methods of asexual reproduction in plants is/are:**
(A) Cuttings (B) Tissues culture
(C) Both (A) and (B) (D) Alternation of generation
- 6. A single mushroom may produce how many spores per minute at the peak of its reproduction?**
(A) 500,000 (B) 50,000
(C) 80,000 (D) 200,000

7. **Perennating organs are associated with which type of asexual reproduction?**
(A) Sporulation (B) Apomixis
(C) Vegetative propagation (D) Cutting
8. **In apomixis, an embryo is created from a diploid cell in the:**
(A) Pollen tube (B) Leaf
(C) Ovule (D) All of the choices are correct
9. **Asexual reproduction differs from sexual reproduction in that it does not require:**
(A) 1 parent (B) 2 parent
(C) Spores (D) Vegetative parts
10. **Asexual reproduction does not introduce:**
(A) Variation
(B) Similarity between parents and offsprings
(C) Same chromosomal number in offsprings
(D) All of the choices are incorrect
11. **Which of the following statements is true of clones?**
(A) Clones show variation
(B) Clones have DNA identical to parent
(C) Clones are formed by meiotic division
(D) All the choices are incorrect
12. **Vegetative propagation does not involve:**
(A) Root parts (B) Stem parts
(C) Leaf parts (D) Flower parts
13. **The mass of dividing undifferentiated cells of the cut end of the shoot is called:**
(A) Callus (B) Periblem
(C) Dermatogen (D) Pericycle
14. **One of the following is not a method of asexual reproduction:**
(A) Sporulation (B) Gametogenesis
(C) Apomixis (D) Parthenogenesis

15. **Tissue culture is a technique used to produce a large number of plants quickly which are all:**
- (A) Variable (B) Unicellular
(C) Identical (D) All (A), (B) and (C)
16. **Which of the following disadvantages applies to tissue culture?**
- (A) Clone may be genetically unstable
(B) Clone may be infertile
(C) Clone karyotype may be altered
(D) All of the choices are correct
17. **A flagellated motile sperm fertilizing a non-motile egg, is called:**
- (A) Isogamy (B) Anisogamy
(C) Oogamy (D) All of the choices are correct
18. **A type of syngamy in which both fusing gametes are flagellated but different in size are known as:**
- (A) Isogamy (B) Anisogamy
(C) Oogamy (D) All of the choices are correct
19. **A type of syngamy in which both fusing gametes are flagellated and same in size are known as:**
- (A) Isogamy (B) Anisogamy
(C) Oogamy (D) All of the choices are correct
20. **In gymnosperms the main plant is diploid and:**
- (A) Homosporous (B) Heterosporous
(C) Microsporous (D) Megasporous
21. **In gymnosperms female gametophyte consists of:**
- (A) Pollen tube (B) Microspore
(C) 2 to 5 archegonia (D) Both (B) and (C)
22. **In gymnosperms male gametophyte develops from:**
- (A) Microspore (B) Megaspore
(C) Embryo sac (D) Synergids
23. **In gymnosperms male gametophyte consists of:**
- (A) Archegonia (B) Megaspore mother cell
(C) Pollen tube (D) Ovule

24. In angiosperms what gives rise to seed after fertilization.
- (A) Microsporangium (B) Pollen tube
(C) Mega sporangium (D) None of these
25. In gymnosperms and angiosperms, the egg is produced in a female structure called:
- (A) A seed (B) A stamen
(C) An ovule (D) A pollen grain
26. If someone gives you a plant and tells you that it is an angiosperm, you know that during its life cycle it will produce:
- (A) Swimming sperm (B) A prothallus
(C) Flowers (D) Cones
27. The transfer of pollen grains to the female part of the plant is called:
- (A) Germination (B) Reproduction
(C) Pollination (D) Fertilization
28. The production of new plants from underground stems is an example of:
- (A) Sexual reproduction (B) Asexual reproduction
(C) Zygote (D) None of the above
29. Which one of the following is the male reproductive part of a flower?
- (A) Stamen (B) Sepal
(C) Petal (D) Pistils
30. In seed plants, sperm travel down through what to reach the egg?
- (A) Stigma tube (B) Ovule tube
(C) Pollen tube (D) Stamen tube
31. A carpel is a leaf which has been modified to produce:
- (A) Microsporangia (B) 2 male gametes
(C) Pollen grains (D) Ovules
32. The stamens are leaves modified for the production of:
- (A) Microspores (B) Megaspores
(C) Ovules (D) Seed

- 33. The sepals and petals are:**
(A) Reproductive parts of flower (B) Non-reproductive parts of flower
(C) Parts of gametophyte (D) Both (A) and (B)
- 34. The ovule contains:**
(A) Microsporangium (B) Male gametophyte
(C) Embryo sac (D) All (A), (B) and (C)
- 35. The unisexual flowers are called:**
(A) Staminate (B) Carpellate
(C) Both (A) and (B) (D) Monoecious
- 36. If staminate and carpellate flowers are present on same plant it is termed as:**
(A) Monoecious (B) Dioecious
(C) Unisexual (D) None of the above
- 37. Date palms are:**
(A) Dioecious (B) Monoecious
(C) Neuter (D) Biexual
- 38. In angiosperms, double fertilization produces two distinct portions of the seed. The endosperm portion's role is to:**
(A) Develop into the embryo (B) Nourish the embryo
(C) Develop into the mature sperm (D) Serve as a reservoir for extra DNA
- 39. Each of the following is a part of a seed except the:**
(A) Embryo (B) Endosperm
(C) Seed-coat (D) Gametophyte
- 40. The mature female gametophyte of an angiosperm is:**
(A) The archegonium and its egg cell
(B) The ovule inside the ovary
(C) The carpel after pollination
(D) An embryo sac with 8 nuclei and 7 cells
- 41. Which part ultimately matures into a fruit?**
(A) Integument (B) Ovary
(C) Archegonium (D) Ovule

42. Which of the following is part of the third whorl of flower?
(A) Calyx (B) Corolla
(C) Petal (D) Stamen
43. Which of the following is formed in the double fertilization and becomes an endosperm?
(A) Synergid cells (B) Antipodal cells
(C) Primary endosperm nucleus (D) Triploid (3n) nucleus
44. A pollen grain is:
(A) Immature male gametophyte (B) Spore
(C) Fruiting body (D) Mature male gametophyte
45. In planst, spores are formed by 1, whereas gametes are formed by 2:
(A) 1-meiosis, 2-mitosis (B) 1-fission, 2-fusion
(C) 1-meiosis, 2-meiosis (D) 1-mitosis, 2-mitosis
46. From life cycle point of view the most important part of a plant is:
(A) Flower (B) Leaf
(C) Stem (D) Root
47. The main embryo develops from the structure formed as a result of fusion of:
(A) 2 polar nuclei of embryo sac (B) Definitive nucleus and male gamete
(C) Egg cell and male gamete (D) Male gamete and synergids
48. The fertilization occurs in:
(A) Ovary (B) Ovule
(C) Embryo sac (D) Nucellus
49. The part of embryo just below the cotyledons that terminates into radicle is called:
(A) Epicotyl (B) Hypocotyl
(C) Plumule (D) None of these
50. The part of embryo just above the cotyledons that terminates into plumule is called:
(A) Epicotyl (B) Hypocotyl
(C) Radicle (D) Coleorhiza

51. A protective sheath surrounding the plumule is:
- (A) Coleoptile (B) Coleorhiza
(C) Cotyledon (D) Scutellum
52. A protective sheath surrounding the radicle is:
- (A) Coleoptile (B) Coleorhiza
(C) Cotyledon (D) Scutellum
53. Single large shield shaped cotyledon of monocot seed is called:
- (A) Coleoptile (B) Coleorhiza
(C) Cotyledon (D) Scutellum
54. It is defined as a cluster of flowers, arising from the main stem axis or peduncle:
- (A) Inflorescence (B) Phosphorescence
(C) Luminescence (D) Senescence
55. Which type of inflorescence is shown in the following diagram?
- (A) Corymb (B) Umbel
(C) Raceme (D) Spike
56. In which type of inflorescence flowers develop into aeropetal succession.
- (A) Racemose (B) Cymose
(C) Dichasial cyme (D) Scorpioid cyme
57. In which type of inflorescence flowers are covered by large bracts called spathes:
- (A) Racemose (B) Cymose
(C) Capitulum (D) Spikelet
58. The type of recemose inflorescence with a short axis and multiple floral pedicels of equal length that appear to arise from a common point is called:
- (A) Corymb (B) Umbel
(C) Raceme (D) Spike

59. A type of uniparous cyme in which succeeding branches are produced on same side is termed as:
- (A) Helicoid cyme (B) Scorpioid cyme
(C) Dichasial cyme (D) None of these
60. A type of uniparous cyme in which succeeding branches are produced on alternate sides is termed as:
- (A) Helicoid cyme (B) Scorpioid cyme
(C) Dichasial cyme (D) None of these
61. It is type of racemose inflorescence that is flat-topped or convex because the outer pedicels are progressively longer than the inner ones.
- (A) Corymb (B) Capitulum
(C) Spadix (D) Spike
62. What is required?
- (A) Water (B) Suitable temperature
(C) Both (A) and (B) (D) None of these
63. The process in which fruit develops without fertilization is called:
- (A) Parthenogenesis (B) Parthenocarpy
(C) Viviparous germination (D) Apomixis
64. The pollen grain consists of:
- (A) Exine part
(B) Intine part
(C) Tube nucleus and generative nucleus
(D) All (A), (B) and (C)
65. Hypogeal germination takes place due to rapid growth of:
- (A) Epicotyl (B) Hypocotyl
(C) Cotyledon (D) All (A), (B) and (C)
66. Epigeal germination takes place due to rapid growth of:
- (A) Epicotyl (B) Hypocotyl
(C) Cotyledon (D) All (A), (B) and (C)
67. A special type of reproduction in which seed starts germinating inside fruit is:
- (A) Epigeal germination (B) Hypogeal germination
(C) Viviparous germination (D) All choices are correct

- 68. The first organ to emerge from the germinating seed is:**
- (A) Radicle (B) Plumule
(C) Cotyledon (D) Epicotyl
- 69. Promotion of flowering by cold treatment given to imbibed seeds or young plants is known as:**
- (A) Parthenocarpy (B) Parthenogenesis
(C) Apomixis (D) Vernalization
- 70. Spinach is:**
- (A) Long day plant (B) Short day plant
(C) Day neutral plant (D) None of these
- 71. Phytochrome exists in two forms i.e., P660 and:**
- (A) P307 (B) P370
(C) P703 (D) P730
- 72. Phytochrome comprises a pigment and a:**
- (A) Lipid (B) Carbohydrate
(C) Mineral (D) Protein
- 73. It has been found that red light promotes flowering in:**
- (A) Long day plants (B) Short day plants
(C) Neutral day plants (D) None of these
- 74. The hormone florigen is produced in:**
- (A) Leaves (B) Flower
(C) Stem (D) Roots
- 75. A form of asexual reproduction in which new individual grows out as a small out growth and eventually separates from parent body is called:**
- (A) Forming a spore (B) Budding
(C) Regeneration (D) Fission
- 76. Reproduction of egg without fertilization by sperm is termed as:**
- (A) Parthenogenesis (B) Parthenocarpy
(C) Regeneration (D) Budding

77. **The technique of producing a genetically identical copy of an organism by replacing the nucleus of an unfertilized ovum with the nucleus of a body cell from the organism is:**
- (A) Budding (B) Cloning
(C) Parthenocarpy (D) Fission
78. **Fraternal twins:**
- (A) Can be only two boys (B) Can be only two girls
(C) Cannot be one boy and one girl (D) Can be one boy and one girl
79. **Sexual reproduction is important to avoid:**
- (A) Variation (B) Chances of survival
(C) Genetic monotony (D) All (A), (B) and (C)
80. **Which of the following cell type is haploid?**
- (A) Primary spermatocyte (B) Spermatogonium
(C) Sertoli cell (D) Secondary spermatocyte
81. **Spermatogenesis and oogenesis both involve:**
- (A) Mitosis only (B) Meiosis only
(C) Both mitosis and meiosis (D) All (A), (B) and (C) are incorrect
82. **After meiosis, what differentiates into the mature sperm?**
- (A) Primary spermatocyte (B) Spermatid
(C) Secondary spermatocyte (D) Spermatogonium
83. **The animals which lay eggs are called:**
- (A) Oviparous (B) Viviparous
(C) Dioecious (D) Neuter
84. **In terrestrial conditions which type fertilization is more common:**
- (A) External (B) Internal
(C) Self (D) None of these
85. **In mammalian males, the reproductive and excretory system share the same:**
- (A) Ureter (B) Vas defrens
(C) Urinary bladder (D) Urethra

- 86. External male genitalia are:**
(A) Vasa efferentia and penis (B) Seminiferous tubules and penis
(C) Scrotum and penis (D) None of these
- 87. Human testes are packed with about how many seminiferous tubules which produce about how many million sperms every day?**
(A) 200, 20 (B) 300, 40
(C) 500, 30 (D) 500, 10
- 88. Three sets of glands secrete fluids which combine with the sperm to form:**
(A) Interstitial fluid (B) Semen
(C) Amniotic fluid (D) Both (A) and (B)
- 89. A human female has around how many oocytes in each of her ovary?**
(A) 30,000 (B) 200,000
(C) 300,000 (D) 20,000
- 90. Fertilization of human eggs most often takes place in the:**
(A) Ovary (B) Uterus
(C) Oviduct (Fallopian tube) (D) Cervix
- 91. In human female only one ovum is usually discharged from the ovary at one time and it is called:**
(A) Parturition (B) Menstruation
(C) Ovulation (D) Implantation
- 92. Where does the uterus opens into the through cervix?**
(A) Fallopian tube (B) Urethra
(C) Vagina (D) All of the choices are correct
- 93. The follicle cells, after release of the egg, are modified to form a special structure called:**
(A) Endometrium (B) Perimetrium
(C) Graffian follicle (D) Corpus luteum
- 94. In mammals that are seasonal breeders, females are receptive only once a year. This is called:**
(A) A follicular cycle (B) An estrous cycle
(C) A menstrual cycle (D) A luteal cycle

95. **The lining or inner layer of the uterus is called the:**
(A) Myometrium (B) Perimetrium
(C) Endometrium (D) Both (A) and (C)
96. **What event occurs in the menstrual cycle when the level of progesterone declines?**
(A) Ovulation (B) Beginning of menses
(C) Formation of corpus luteum (D) Maturation of ovarian follicle
97. **What is produced mainly by the corpus luteum in the ovary following ovulation?**
(A) Progesterone (B) Follicle stimulating hormone
(C) Luteinizing hormone (D) Chorionic gonadotrophic hormone
98. **From which of the following structures is the secondary oocyte ovulated?**
(A) Corpus luteum (B) Graffian follicle
(C) Primary follicle (D) Germinal epithelium
99. **The process by which _____ becomes embedded in endometrium is called _____.**
(A) morula, parturition (B) Blastocyst, parturition
(C) Blastocyst, implantation (D) Morula, implantation
100. **What controls the release of milk from the mammary glands?**
(A) Oxytocin (B) Follicle stimulating hormone
(C) Luteinizing hormone (D) None of these
101. **An egg fertilized in the laboratory and then implanted in the uterus for development is called:**
(A) Cloning (B) Test tube baby
(C) Both (A) and (B) (D) In vivo fertilization
102. **The period starting from conception up to the birth of baby is called:**
(A) Implantation period (B) Gestation period
(C) Extra uterine period (D) Imprinting period
103. **Menopause in females comes at the age of:**
(A) 30 to 40 years (B) 45 to 50 years
(C) 60 to 65 years (D) 70 years

- 104. The hormone from the hypothalamus stimulating release of FSH from the anterior pituitary is:**
- (A) Gonadotropin (B) Oxytocin
(C) Luteinizing hormone (D) Progesterone
- 105. Sexually transmitted disease (STD) caused by *Treponema pallidum* is:**
- (A) Syphilis (B) Genital herpes
(C) Gonorrhoea (D) AIDS
- 106. Genital herpes is type of STD caused by:**
- (A) A bacterium (B) A sporozoan
(C) A virus (D) A fungus
- 107. What followings is the egg is not fertilized?**
- (A) Menstruation (B) Pregnancy
(C) Implantation (D) All (A), (B) and (C)
- 108. It is a tube that connects a developing embryo or fetus to the placenta:**
- (A) Amnion (B) Chorionic villum
(C) Umbilical cord (D) Allantois
- 109. Gonorrhoea is:**
- (A) Bacterial disease (B) Viral disease
(C) Protozoanal disease (D) Fungal disease
- 110. Infertility is overcome by a technique known as:**
- (A) In vitro fertilization (B) In vivo fertilization
(C) Both (A) and (B) (D) None of these
- 111. The tissue attaching the embryo to the wall of uterus is:**
- (A) Graffian follicle (B) Corpus luteum
(C) Placenta (D) All choices are incorrect
- 112. This hormone would be at an increased level in a mother who is breast feeding:**
- (A) Thyroxine (B) Prolactin
(C) Aldosterone (D) Insulin

- 113. The contractions of the muscles of uterus during parturition are stimulated by:**
- (A) Prolactin (B) GnRH
(C) FSH (D) Oxytocin
- 114. During females fertile years, about how many oocytes develop into mature eggs?**
- (A) 20,000 (B) 250,000
(C) 300,000 (D) 450
- 115. Which hormone stimulates process of ovulation?**
- (A) Prolactin (B) LH
(C) FSH (D) Oxytocin
- 116. The time when teenage males begin to make and release sperms is called:**
- (A) Menopause (B) Menstruation
(C) Puberty (D) All of the above
- 117. The male reproductive cell is the:**
- (A) Semen (B) Sperm
(C) Ovum (D) None of the above
- 118. The male reproductive organ is the:**
- (A) Penis (B) Testis
(C) Ovary (D) All
- 119. Testosterone is the:**
- (A) Male sex hormone
(B) Female sex hormone
(C) A chemical needed for menopause
(D) Type of vitamin
- 120. Some body changes that occur in males during puberty include:**
- (A) A deep voice (B) Facial hair
(C) Both A and B (D) None of the above
- 121. Sperm is made in the:**
- (A) Penis (B) Testes
(C) Prostate gland (D) Abdominal cavity

- 122. The sac containing the testes is the:**
- (A) Scrotum (B) Epididymis
(C) Testicle (D) Vas efference
- 123. Another name for a testis is the:**
- (A) Testicle (B) Ovary
(C) Gland (D) Vas efference
- 124. The function of the epididymis next to each testis is to:**
- (A) Secrete semen
(B) Store sperm temporarily
(C) Lubricate the sperm for more effective movement
(D) None of the above
- 125. The fluid produced by glands of the male reproductive system is:**
- (A) Sperm (B) Semen
(C) Urine (D) All
- 126. Semen protects the sperm from:**
- (A) Leaving the testis (B) Mutations
(C) Dehydration (D) All
- 127. The tube from the urinary bladder through the penis is the:**
- (A) Urethra (B) Sperm duct
(C) Vas deferens (D) None of the above
- 128. Another name for sperm duct is:**
- (A) Epididymis (B) Penis
(C) Vas deferens (D) None of the above
- 129. Which gland enlarges to block urine from leaving the bladder when sperms are ejaculated?**
- (A) Pancreas (B) Penile
(C) Prostate (D) All
- 130. The penis becomes erect because:**
- (A) Spongy tissues inside it fills with blood
(B) There is a hinge joint between the pelvic bone and the penile bone
(C) It fills with urine or sperm
(D) None of the above

- 131. The male hormone testosterone is produced by:**
- (A) Leydig cells (B) Seminiferous tubules
(C) Epididymis (D) Vas deferens
- 132. Male gonads are called:**
- (A) Testes (B) Ovaries
(C) Scrotal sacs (D) Sperm duct
- 133. The fertilized egg is called:**
- (A) Ovum (B) Blastocyst
(C) Diploid cell (D) Zygote
- 134. The ultimate stoppage of menstrual cycle is called:**
- (A) Puberty (B) Menarche
(C) Menopause (D) Old age
- 135. The process by which the sperms are produced is known as:**
- (A) Ovulation (B) Spermatogenesis
(C) Oogenesis (D) Gestation
- 136. The tube that carries the sperms out of the tests is the:**
- (A) Vasa efferentia (B) Vas deferens
(C) Oviduct (D) Epididymis
- 137. The process by which the sperms are released is called:**
- (A) Spermatogenesis (B) Oogenesis
(C) Ovulation (D) Ejaculation
- 138. The external genitalia in females is called:**
- (A) Pubis (B) Vagina
(C) Vulva (D) Clitoris
- 139. Sterilisation in males is called as:**
- (A) Tubectomy (B) Vasectomy
(C) IVF (D) GIFT
- 140. Binary fission is seen in:**
- (A) Plasmodium (B) Hydra
(C) Amoeba (D) Mucor

- 141. The endosperm nucleus is:**
- (A) Haploid (B) Diploid
(C) Triploid (D) Tetraploid
- 142. The fertilization of human egg by the sperm takes place in:**
- (A) Ovary (B) Oviduct
(C) Vagina (D) Uterus
- 143. Pollen tube contains:**
- (A) One male nucleus (B) Two male nuclei
(C) Three male nuclei (D) Four male nuclei
- 144. If the pollen is transferred to the stigma of the same flower, it is called:**
- (A) Allogamy (B) Autogamy
(C) Cross pollination (D) Double fertilization
- 145. Pollen grains are produced by:**
- (A) Ovary (B) Filament
(C) Stigma (D) Anther
- 146. The collective name for sepals is:**
- (A) Androecium (B) Gynoecium
(C) Corolla (D) Calyx
- 147. The individual units of corolla are called:**
- (A) Petals (B) Sepals
(C) Stamens (D) Pistils
- 148. The attachment of the embryo to the uterus is called:**
- (A) Gestation (B) Fertilisation
(C) Implantation (D) Menstruation
- 149. The onset of the reproductive age is called:**
- (A) Menstruation (B) Menarche
(C) Menopause (D) Puberty
- 150. The first time that the monthly bleeding occurs is called:**
- (A) Maturity (B) Menarche
(C) Menopause (D) Puberty

- 151. The most important part of the plant for continuation of the life of the species is:**
- (A) Stem (B) Root
(C) Flower (D) Leaf
- 152. The type of vegetative propagation seen in *Chrysanthemum* is:**
- (A) Runner (B) Sucker
(C) Stolon (D) Offset
- 153. Successfully grafted plants bear the flowers and fruits characteristic of the:**
- (A) Scion (B) Stock
(C) Either scion or stock (D) A mixture of scion and stock
- 154. Sugarcane is normally grown by:**
- (A) Cutting (B) Grafting
(C) Layering (D) Seeds
- 155. Unequal daughter cells are produced by:**
- (A) Fragmentation (B) Sporulation
(C) Fission (D) Budding
- 156. Vegetative propagation in sweet potato is by:**
- (A) Stem (B) Root
(C) Leaf (D) None of the above
- 157. Vegetative propagation in *Bryophyllum* is by:**
- (A) Stem (B) Root
(C) Leaf (D) None of the above
- 158. An example of a hermaphrodite is:**
- (A) Frog (B) Fish
(C) Earthworm (D) Hydra
- 159. Multiple fission is seen in:**
- (A) Yeast (B) Paramecium
(C) Plasmodium (D) Rhizopus
- 160. Progesterone is secreted by:**
- (A) Ovarian follicle (B) Graafian follicle
(C) Corpus luteum (D) Corpus albicans

- 161. The hormone secreted by the pituitary to start the ovulation process is:**
- (A) FSH (B) Luteinizing hormone
(C) Oestrogen (D) Progesterone
- 162. Sperms are produced at a temperature that is _____ the body temperature.**
- (A) Same as (B) Lower than
(C) Higher than (D) Immaterial to
- 163. The part of the sperm that contains the lytic enzyme is:**
- (A) Acrosome (B) Nucleus
(C) Mid-piece (D) Tail
- 164. The life span of the sperm is:**
- (A) 2 days (B) 1-3 days
(C) 1-3 weeks (D) 7 days
- 165. The sperms are temporarily stored in:**
- (A) Vas deferens (B) Vas efferens
(C) Epididymis (D) Bladder
- 166. The endocrine system is made up of:**
- (A) Hormones (B) Glands
(C) Gonads (D) Prostaglandins
- 167. The endocrine system:**
- (A) Affects only the reproductive system
(B) Releases hormones into the bloodstream
(C) Competes with the nervous system
(D) is made up primarily of glands with ducts
- 168. Which of the followings is a gland of the endocrine system?**
- (A) Sweat gland (B) Tear gland
(C) Pituitary gland (D) All of the above

169. Figure shows the body's:

- (A) Hormones (B) Target cells
(C) Endocrine glands (D) Exocrine glands

170. Which structure in figure regulates the level of calcium in the blood?

- (A) C (B) D
(C) A (D) F

171. What is the function of the structure labelled H in figure?

- (A) to produce sex hormones (B) to produce thyroxine
(C) to produce insulin and glucagon (D) to produce thymosin

172. Which structure in figure releases hormones that regulate many of the other endocrine glands?

- (A) B (B) D
(C) H (D) J

173. Unlike endocrine glands, exocrine glands:

- (A) Release secretions through ducts
(B) Release hormones
(C) Release secretions directly into the bloodstream
(D) are found throughout the body

- 174. Unlike non-steroid hormones, steroid hormones:**
- (A) Remain outside the target cells (B) Bind to receptors inside the target cells
(C) have no target cells (D) are made of proteins
- 175. A thermostat is a good example of:**
- (A) Hormone-receptor complex (B) Feedback system
(C) Prostaglandin (D) Exocrine gland
- 176. One way the endocrine system helps maintain homeostasis is by having:**
- (A) Each gland secrete only one hormone
(B) Two hormones with opposite effects regulate certain things
(C) Only steroid hormones regulate important functions
(D) The pituitary gland regulate all the other glands
- 177. Feedback inhibition means that an increase in a substance will:**
- (A) Decrease production of that substance
(B) Increase production of that substance
(C) Increase the production of other substances
(D) Stop production of another substance
- 178. Which endocrine gland secretes sex hormones?**
- (A) Adrenal medulla (B) Testis
(C) Hypothalamus (D) Pituitary
- 179. Which gland fails to produce enough of its hormone in the disease diabetes mellitus?**
- (A) Adrenal (B) Hypothalamus
(C) Pancreas (D) Parathyroid
- 180. Which gland produces epinephrine and norepinephrine?**
- (A) Parathyroid (B) Hypothalamus
(C) Pituitary (D) Adrenal

- 181. Puberty usually begins between the ages of:**
- (A) 5 and 8 (B) 9 and 15
(C) 16 and 19 (D) 20 and 25
- 182. Which hormones stimulate the gonads to mature?**
- (A) FSH and LH (B) Estrogens
(C) Androgens (D) Testosterone and progesterone
- 183. The testes and the ovaries do not begin making active reproductive cells until:**
- (A) Birth (B) Fertilization
(C) Gastrulation (D) Puberty
- 184. Testosterone is needed for the development of:**
- (A) Egg (B) Sperm
(C) the uterus (D) All of the above
- 185. Specialized sex cells are known as:**
- (A) Gametes (B) Hormones
(C) Gonads (D) Organs
- 186. How many ova do the ovaries usually produce?**
- (A) One per day (B) About 20 per year
(C) One between them each month (D) 200 million at a time
- 187. Which structure produces sperm?**
- (A) Scrotum (B) Epididymis
(C) Seminiferous tubules (D) Vas deferens
- 188. Which of the followings is not a function of the female reproductive system?**
- (A) to produce eggs (B) to prepare the body to carry an embryo
(C) to deliver sperm (D) to release eggs into the Fallopian tubes
- 189. Which organ system is responsible for making and delivering sperm?**
- (A) Female reproductive system (B) Endocrine system
(C) Nervous system (D) Male reproductive system

- 190. Which of the followings is not a phase in the menstrual cycle?**
- (A) Menstruation (B) Luteal
(C) Fertilization (D) Ovulation
- 191. One menstrual cycle usually lasts about a:**
- (A) Day (B) Week
(C) Month (D) Year
- 192. During the menstrual cycle, LH and FSH are at peak, causing the:**
- (A) Corpus luteum to disintegrate
(B) Follicle to release a mature egg
(C) Uterine lining to detach from the uterus
(D) the lining of the uterus to thicken
- 193. Menstruation does not occur if the:**
- (A) Uterine lining thickens (B) Estrogen level falls
(C) Progesterone level falls (D) Egg is fertilized
- 194. A zygote is a:**
- (A) Two-celled embryo (B) Solid ball of about 50 cells
(C) Blastocyst (D) Fertilized egg
- 195. The chances of fertilization are very good if sperms are present and is:**
- (A) Blastocyst is already present (B) Egg in the Fallopian tubes
(C) Woman is menstruating (D) All of the above
- 196. Which of the following are required for fertilization to occur inside the female body?**
- (A) Sperm must swim into a Fallopian tube
(B) An egg must be present in the Fallopian tube
(C) The nucleus of a sperm must enter an egg cell
(D) All of the above

- 197. During the process of fertilization, which step happens first?**
- (A) The sperm's nucleus enters the egg cell
 - (B) Enzymes break down the protective layer of the egg cell membrane
 - (C) A sperm attaches to a binding site on the egg cell membrane
 - (D) The cell membrane of the egg cell changes
- 198. Where does fertilization usually occur?**
- (A) Fallopian tube
 - (B) Ovary
 - (C) Uterus
 - (D) Vagina
- 199. What is the result of gastrulation?**
- (A) A blastocyst
 - (B) A zygote
 - (C) The amnion
 - (D) Germ layers
- 200. Which of the followings are formed during gastrulation?**
- (A) Endoderm
 - (B) Ectoderm
 - (C) Mesoderm
 - (D) All of the above
- 201. Which of the following processes happens last?**
- (A) Gastrulation
 - (B) Implantation
 - (C) Fertilization
 - (D) Ovulation
- 202. Which of the followings is a function of the placenta?**
- (A) Mixing the blood of the mother and the fetus
 - (B) Protecting the fetus from any drugs or alcohol in the mother's body
 - (C) Providing nutrients to the fetus
 - (D) Cushioning and protecting the fetus
- 203. The placenta connects the:**
- (A) Fetus to the mother's uterus
 - (B) Ectoderm to the endoderm
 - (C) Umbilical cord to the mother's vagina
 - (D) Uterus to the cervix

- 204. Which stage of the human life cycle occurs first?**
- (A) Puberty (B) Adulthood
(C) Adolescence (D) Childhood
- 205. All of the followings usually occur during adolescence except:**
- (A) A growth spurt (B) Secondary sex characteristics
(C) Puberty (D) The appearance of first permanent teeth
- 206. Eighty to 90% of seminal fluid (semen) is secreted by the combined secretions of:**
- (A) Seminal vesicles and prostate
(B) Seminal vesicles and seminiferous tubules
(C) Seminiferous tubules and epididymis
(D) Bulbourethral glands and prostate
- 207. In the normal male, there are two of each of the following structures except:**
- (A) Testes (B) Seminal vesicles
(C) Prostate (D) Vas deferens
- 208. Which of the followings are produced by the testes?**
- (A) Spermatozoa (B) Testosterone
(C) Inhibin (D) GnRH
- 209. Which of the followings are produced by the ovaries and then leave the ovaries?**
- (A) Follicles (B) Secondary oocyte
(C) Corpus luteum (D) Corpus albicans
- 210. Which of the following are functions of LH?**
- (A) Begin the development of the follicle
(B) Stimulate change of follicle cells into corpus luteum
(C) Stimulate release of secondary oocyte (ovulation)
(D) Stimulate corpus luteum to secrete estrogen and progesterone

- 211. Menstruation in the adult female is most directly the result of:**
- (A) Decreased FSH secretion
 - (B) Decreased LH secretion
 - (C) Absence of chorionic gonadotropin
 - (D) Decreased secretion of progesterone and estrogen by corpus luteum
- 212. Spermatogenesis involves the development in the seminiferous tubules of mature sperm from:**
- (A) Sustentacular cells
 - (B) Interstitial cells
 - (C) Spermatogonia
 - (D) Granulose cells
- 213. If a female's oocyte is penetrated by a sperm, then:**
- (A) The second meiotic division occurs to produce an ovum
 - (B) The oocyte will be shed through the oviduct, uterus and vagina
 - (C) Conception will be delayed several days
 - (D) Implantation will indefinitely delayed
- 214. Each oogonium containing 46 chromosomes produces how many mature fertilizable ova?**
- (A) 400,000
 - (B) 400
 - (C) 4
 - (D) 1
- 215. Which of the following statements is false for a sperm?**
- (A) Consists of a head, middle piece and a tail
 - (B) Contains 22 autosomes
 - (C) is solely responsible for the sex of a zygote
 - (D) has a great deal of cytoplasm
- 216. The best reason known for the initiation of puberty in female is:**
- (A) Hypothalamus becomes insensitive to feedback inhibition by estrogen
 - (B) Hypothalamus releases FSH-RF to stimulate pituitary gland to release FSH to start menstrual cycles
 - (C) The timing of the first ovulation, or menarche, was pre-set by increased androgen secretion way back in pre-natal development
 - (D) Both (A) and (B) are correct

- 217. The average life of human sperm after ejaculation is:**
- (A) 24 hours (B) 36 to 48 hours
(C) 6 hours (D) 72 hours
- 218. Just before fertilization is about to occur, what the sperm must release to prevent competing sperm from reaching the egg nucleus at the same time?**
- (A) Control of the corona radiata from the sperm head
(B) Proteolytic enzymes
(C) Large amounts of hyaluronidase
(D) All of the above
- 219. Which one of the following structures is haploid?**
- (A) Spermatogonia (B) Primary spermatocytes
(C) Secondary spermatocytes (D) Sertoli cells
- 220. After ovulation, the ruptured Graafian follicle:**
- (A) Becomes part of the epithelial tissue covering the ovary
(B) Passes into the uterine tube
(C) Forms a more mature follicle
(D) Is repaired and eventually forms corpus luteum
- 221. Oogenesis takes place in the:**
- (A) Corpus luteum (B) Uterine tube
(C) (A) and (B) are not correct (D) (A) and (B) are correct
- 222. Which is true about estrogens?**
- (A) Are responsible for growth of the endometrium during early phase of menstruation
(B) They are secreted in large amounts during pregnancy
(C) They decrease in amounts during implantation
(D) Both (A) and (B) are correct
- 223. The endometrium:**
- (A) is the outermost layer of the ovaries
(B) is repaired after menstruation by progesterone
(C) is made secretory by the action of estrogen
(D) All of the above

- 224. The best description of when ovulation occurs in the human is:**
- (A) Exactly midway between menstrual cycles
 - (B) 14 days after the beginning of menstruation
 - (C) 14 days after the end of menstruation
 - (D) 14 days before the beginning of menstruation
- 225. Menstrual flow is initiated by a decrease in blood concentration of which two hormones?**
- (A) FSH and LH
 - (B) Estrogen and progesterone
 - (C) Progesterone and androgen
 - (D) FSH and estrogen
- 226. The interstitial cells are found:**
- (A) in the seminiferous tubules of the testes
 - (B) between the seminiferous tubules
 - (C) lining the wall of vas deferens
 - (D) within the wall of epididymis
- 227. Prior to maturation and ejaculation, sperms are stored in the:**
- (A) Prostate gland
 - (B) Ejaculatory duct
 - (C) Epididymis
 - (D) Seminal vesicle

Answers

Sr.	Ans.								
1.	(A)	2.	(D)	3.	(D)	4.	(D)	5.	(C)
6.	(A)	7.	(C)	8.	(C)	9.	(B)	10.	(A)
11.	(B)	12.	(D)	13.	(A)	14.	(B)	15.	(C)
16.	(D)	17.	(C)	18.	(B)	19.	(A)	20.	(B)
21.	(C)	22.	(A)	23.	(C)	24.	(C)	25.	(C)
26.	(C)	27.	(C)	28.	(B)	29.	(A)	30.	(C)
31.	(D)	32.	(A)	33.	(B)	34.	(C)	35.	(C)
36.	(A)	37.	(A)	38.	(B)	39.	(D)	40.	(D)
41.	(B)	42.	(D)	43.	(D)	44.	(A)	45.	(A)
46.	(A)	47.	(C)	48.	(C)	49.	(B)	50.	(A)
51.	(A)	52.	(B)	53.	(D)	54.	(A)	55.	(D)
56.	(A)	57.	(B)	58.	(B)	59.	(A)	60.	(B)
61.	(A)	62.	(C)	63.	(A)	64.	(D)	65.	(A)
66.	(B)	67.	(C)	68.	(A)	69.	(D)	70.	(A)
71.	(D)	72.	(D)	73.	(A)	74.	(A)	75.	(B)
76.	(A)	77.	(B)	78.	(D)	79.	(C)	80.	(D)
81.	(C)	82.	(B)	83.	(A)	84.	(B)	85.	(D)
86.	(C)	87.	(C)	88.	(B)	89.	(B)	90.	(C)
91.	(C)	92.	(C)	93.	(D)	94.	(B)	95.	(C)
96.	(B)	97.	(A)	98.	(B)	99.	(C)	100.	(A)
101.	(B)	102.	(B)	103.	(B)	104.	(A)	105.	(A)
106.	(C)	107.	(A)	108.	(C)	109.	(A)	110.	(A)
111.	(C)	112.	(B)	113.	(D)	114.	(D)	115.	(B)
116.	(C)	117.	(B)	118.	(B)	119.	(A)	120.	(C)

Sr.	Ans.								
121.	(B)	122.	(A)	123.	(A)	124.	(B)	125.	(B)
126.	(C)	127.	(A)	128.	(C)	129.	(C)	130.	(A)
131.	(A)	132.	(A)	133.	(D)	134.	(C)	135.	(B)
136.	(B)	137.	(D)	138.	(C)	139.	(B)	140.	(C)
141.	(C)	142.	(B)	143.	(B)	144.	(B)	145.	(D)
146.	(D)	147.	(A)	148.	(C)	149.	(D)	150.	(B)
151.	(C)	152.	(B)	153.	(A)	154.	(A)	155.	(D)
156.	(B)	157.	(C)	158.	(C)	159.	(C)	160.	(C)
161.	(B)	162.	(B)	163.	(A)	164.	(B)	165.	(C)
166.	(B)	167.	(B)	168.	(C)	169.	(C)	170.	(A)
171.	(C)	172.	(A)	173.	(B)	174.	(B)	175.	(B)
176.	(B)	177.	(A)	178.	(B)	179.	(C)	180.	(D)
181.	(B)	182.	(A)	183.	(D)	184.	(C)	185.	(A)
186.	(C)	187.	(C)	188.	(C)	189.	(D)	190.	(B)
191.	(C)	192.	(C)	193.	(D)	194.	(D)	195.	(B)
196.	(D)	197.	(C)	198.	(A)	199.	(D)	200.	(D)
201.	(A)	202.	(D)	203.	(A)	204.	(D)	205.	(D)
206.	(D)	207.	(D)	208.	(B)	209.	(B)	210.	(C)
211.	(D)	212.	(C)	213.	(A)	214.	(D)	215.	(D)
216.	(B)	217.	(D)	218.	(B)	219.	(D)	220.	(D)
221.	(B)	222.	(A)	223.	(B)	224.	(C)	225.	(B)
226.	(B)	227.	(C)						

SCHOOLZ



GROWTH AND DEVELOPMENT

- The progressive changes which are undergone before an organism acquires its adult form constitute:**
 - Metamorphosis
 - Embryonic development
 - Growth
 - Development
- Meristems found at the tips of root and shoot are called:**
 - Intercalary
 - Lateral
 - Apical
 - None of them
- During cell division the number of cells increase by:**
 - Elongation
 - Meiosis
 - Mitosis
 - Maturation
- During elongation the cell volume increases upto 150 times due to uptake of:**
 - Food
 - Minerals
 - Water
 - Air
- The light which favours elongation of cells is:**
 - Red
 - White
 - Blue
 - Ultraviolet
- Metabolic activity and growth cannot take place in absence of:**
 - High temperature
 - Light
 - CO₂
 - Oxygen
- what causes apical dominance by diffusing from the apical bud which inhibits the growth of lateral buds?**
 - Food
 - Minerals
 - Water
 - Auxin

8. A series of mitotic divisions which take place in a zygote are called:
- (A) Fertilization (B) Growth
(C) Gastrulation (D) Cleavage
9. At the cephalic end of primitive streak, closely packed cells form a local thickening known as:
- (A) Splanchnic mesoderm (B) Somatic mesoderm
(C) Hensen's node (D) Gastrocoele
10. The cavity formed between somatic and splanchnic mesoderm is:
- (A) Gastrocoele (B) Neurocoel
(C) Coelom (D) Primitive streak
11. In 24 hours embryo, the folding of neural plate is clearly visible in:
- (A) Neurula (B) Gastrula
(C) Blastula (D) Morulla
12. Zygote of which animal Spemann divided into two equal halves with the help of minute ligature of human hair?
- (A) Salamander (B) Frog
(C) Fish (D) Sheep
13. During gastrulation epiblast and hypoblast are two layers of:
- (A) Blastoderm (B) Gastrula
(C) Neurula (D) Morulla
14. Larval epidermis is produced by:
- (A) Yellow cytoplasm (B) Gray equatorial cytoplasm
(C) Clear cytoplasm (D) Gray vegetal cytoplasm
15. The size of *Acetabularia* may be upto several centimeters, though it has:
- (A) Many nuclei (B) No nucleus
(C) Two nuclei (D) One nucleus
16. This alga has a long stalk with an umbrella shaped cap at its top and rhizoids, attached to the ground:
- (A) *Acetabularia* (B) *Spirogyra*
(C) *Euglena* (D) *Chlamydomonas*

17. **The scientist who worked on Acetabularia is:**
(A) Spemann (B) Hans Dietrich
(C) Haemmerling (D) Thimann
18. **In 18 hours embryo, it is the most prominent structure:**
(A) Neurocoel (B) Notochord
(C) Hensen's node (D) Primitive streak
19. **from how many celled embryo did Spemann observed that, if a single cell is separated, it contains a complete set of genes and forms a complete embryo?**
(A) 8 (B) 12
(C) 20 (D) 16
20. **When a piece of ectoderm was removed from Frog's embryo, it was unable to form normal:**
(A) Digestive system (B) Circulatory system
(C) Reproductive system (D) Nervous system
21. **The human life span is judged to be maximum of:**
(A) 150 years (B) 60 years
(C) 90 years (D) 120-125 years
22. **In microcephaly, the individuals are born with small:**
(A) Skull (B) Ulna
(C) Humerus (D) Radius
23. **The negative physiological changes in our body are called:**
(A) Abnormalities (B) Regeneration
(C) Growth (D) Degeneration
24. **This is the condition in which one of the sex chromosome is missing:**
(A) Klinefelter's syndrome (B) Turner's syndrome
(C) Trisomy (D) Mutation
25. **Primary growth:**
(A) Optimum temperature for growth (B) Secondary growth
(C) Photoperiodism (D) Apical meristems

- 26. Cambium:**
- (A) Apical meristems (B) Photoperiodism
(C) Secondary growth (D) Optimum temperature for growth
- 27. Increase in cell volume:**
- (A) Due to uptake of water (B) Photoperiodism
(C) Secondary growth (D) Apical meristems
- 28. 25-30°C:**
- (A) Optimum temperature for growth (B) Secondary growth
(C) Apical meristems (D) Photoperiodism
- 29. Organogenesis:**
- (A) Body organs formed, cells interact and differentiate
(B) Translucent appearance in blastoderm
(C) Blastocoele formed
(D) Folding of neural plate visible
- 30. Blastula:**
- (A) Folding of neural plate visible
(B) Translucent appearance in blastoderm
(C) Body organs formed, cells interact and differentiate
(D) Blastocoele formed
- 31. Area pellucida:**
- (A) Body organs formed, cells interact and differentiate
(B) Translucent appearance in blastoderm
(C) Blastocoele formed
(D) Folding of neural plate visible
- 32. Neurula:**
- (A) Body organs formed, cells interact and differentiate
(B) Blastocoele formed
(C) Folding of neural plate visible
(D) Translucent appearance in blastoderm

- 33. Thimann and Skoog:**
(A) 22nd day (B) Apical dominance
(C) 21st day (D) Gives to muscle cells
- 34. Chick hatches:**
(A) 21st day (B) 17th day
(C) Gives to muscle cells (D) 22nd day
- 35. Yellow cytoplasm:**
(A) Apical dominance (B) Gives to muscle cells
(C) 21st day
(D) Control the functioning of a specific cell type
- 36. Determinants:**
(A) 21st day
(B) Apical dominance
(C) 22nd day
(D) Control the functioning of a specific cell type
- 37. Regeneration:**
(A) (XXY) (B) Microcephaly
(C) Due to aging (D) None of these
- 38. Arthritis and arteriosclerosis:**
(A) Microcephaly
(B) Due to aging
(C) Ability to regain or recover the lost or injured part
(D) None of the above
- 39. Klinefelter's syndrome:**
(A) (XXY) (B) Microcephaly
(C) Due to aging (D) (XO)
- 40. Turner's syndrome:**
(A) (XO)
(B) Ability to regain or recover the lost or injured part
(C) XXY
(D) Due to aging

- 41. Which of the followings is irrelevant for growth and development?**
(A) Cell division (B) Cell elongation
(C) Differentiation (D) All of the above
- 42. The cells which have ability to divide are:**
(A) Parenchyma (B) Meristem
(C) Collenchyma (D) Leaf cells
- 43. Match cambium with one the followings:**
(A) Apical meristem (B) Lateral meristem
(C) Intercalary meristem (D) All of the above
- 44. The meristem present at the tip of roots is:**
(A) Apical meristem (B) Intercalary meristem
(C) Lateral meristem (D) All of the above
- 45. The meristem present at the base of internodes is:**
(A) Apical meristem (B) Lateral meristem
(C) Intercalary meristem (D) All of the above
- 46. The growth of flowers is:**
(A) Indeterminate (B) Determinate
(C) Automatic (D) Controlled
- 47. The growth of root is:**
(A) Indeterminate (B) Secondary growth
(C) Primary growth (D) Determinate
- 48. The growth, in which length of plant increases, is:**
(A) Indeterminate (B) Determinate
(C) Primary growth (D) Secondary growth
- 49. The growth, in which width of plant increases, is:**
(A) Indeterminate (B) Secondary growth
(C) Primary growth (D) Determinate
- 50. The formation of cells of pith, cortex and vascular bundle is:**
(A) Cell elongation (B) Cell division
(C) Maturation (D) Cell division

- 51. The zone present at a little distance from the apex is:**
(A) Cell elongation (B) Differentiation
(C) Maturation (D) Cell division
- 52. Which of the followings is external factor in growth?**
(A) Hormone (B) Nutrition
(C) Temperature (D) Water
- 53. The internal factor for growth is:**
(A) Light (B) Oxygen
(C) Vitamins (D) Carbon dioxide
- 54. If plants are grown in dark, it faces the deficiency of:**
(A) Water (B) Nutrients
(C) Hormones (D) Vitamins
- 55. Which of the following factors supply energy during growth?**
(A) Hormones (B) Water
(C) Vitamins (D) Nutrients
- 56. The leaf primordial cells form which of the following organ?**
(A) Leaves (B) Shoot
(C) Leaves and shoot (D) None of the above
- 57. The cambium is formed in:**
(A) Stage 1 (B) Stage 2
(C) Stage 3 (D) Stage 4
- 58. Xylem and phloem are formed in:**
(A) Stage 1 (B) Stage 5
(C) Stage 4 (D) Stage 6
- 59. Which of the following hormones produces inhibitory effect in apical dominance?**
(A) Gibberellins (B) Auxins
(C) Cytokinins (D) Abscisic acid
- 60. The hormone which releases inhibitory effect is:**
(A) Gibberellins (B) Cytokinins
(C) Abscisic acid (D) Auxins

- 61. Match growth correlations with one of the following:**
(A) Apical dominance (B) Inhibitory effects
(C) Compensatory effects (D) All of the above
- 62. The phenomenon which inhibits the sprouting of lateral bud is:**
(A) Apical dominance (B) Inhibitory effects
(C) Compensatory effects (D) None of the above
- 63. The rounded closely packed mass of blastomere is:**
(A) Blastula (B) Morulla
(C) Gastrula (D) Embryo
- 64. The layers of blastula are:**
(A) Ectoderm (B) Mesoderm
(C) Blastoderm (D) Endoderm
- 65. The stage of embryo with segmented cavity is called:**
(A) Blastula (B) Morulla
(C) Gastrula (D) Embryo
- 66. The presumptive endoderm is:**
(A) Epiblast (B) Hypoblast
(C) Blastoderm (D) None of the above
- 67. The peripheral part of blastoderm is called:**
(A) Area pellucida (B) Area opaca
(C) Area of cell division (D) None of the above
- 68. The upper area with translucent appearance is:**
(A) Area pellucida (B) Area opaca
(C) Area of cell division (D) None of the above
- 69. The mesodermal cells migrate medially and caudally to form:**
(A) Hensen's node (B) Primitive gut
(C) Primitive streak (D) Somites
- 70. The primitive groove is marked on both sides of the embryo by:**
(A) Henson's node (B) Primitive ridges
(C) Primitive streak (D) Primitive gut

71. **Closely packed cells at cephalic end of primitive streak form a local thickening called:**
- (A) Primitive gut (B) Hensen's node
(C) Primitive streak (D) Somites
72. **Which of the followings form body muscles?**
- (A) Hensen's node (B) Primitive gut
(C) Somites (D) Primitive streak
73. **During the development of chick, somites are formed after:**
- (A) 20 – 25 hours (B) 25 – 26 hours
(C) 26 – 27 hours (D) 28 – 29 hours
74. **The cavity formed between somatic and splanchnic mesoderm is:**
- (A) Blastocoel (B) Primitive cavity
(C) Coelom (D) Neurocoel
75. **In the chick of 18 hour, the structure formed is:**
- (A) Neural plate (B) Neural groove
(C) Neural fold (D) Neural tube
76. **Neural groove is formed after:**
- (A) 19 – 20 hours (B) 21 – 22 hours
(C) 23 – 24 hours (D) 24 – 25 hours
77. **The scientist who worked on sea urchin embryo was:**
- (A) Spemann (B) Dietersch
(C) Duetrochet (D) Lyn
78. **The pigment free area of egg is called:**
- (A) Animal hemisphere (B) Vegetal hemisphere
(C) Gray crescent (D) All of the above
79. **The larval epidermis is formed from:**
- (A) Clear cytoplasm (B) Yellow cytoplasm
(C) Grey vegetal (D) Grey equatorial
80. **The part of cytoplasm which form notochord is:**
- (A) Clear cytoplasm (B) Yellow cytoplasm
(C) Grey vegetal (D) Grey equatorial

- 81. Experiments on Acetabulum were performed by:**
(A) Spemann (B) Dietrich
(C) Haemmerling (D) Lyn
- 82. Selection of genes is done by:**
(A) Nucleus (B) Chromosome
(C) Cytoplasm (D) Ribosomes
- 83. Haemmerling performed experiments on:**
(A) Yeast (B) Salamander
(C) Acetabularia (D) Sea urchin
- 84. Spemann performed experiments on:**
(A) Salamander (B) Sea urchin
(C) Frog (D) Acetabularia
- 85. The biologists performed experiments on induction:**
(A) Spemann (B) Mangold
(C) Both (D) None
- 86. The primary organizer is:**
(A) Ventral lip of blastopore (B) Dorsal lip of blastopore
(C) Lateral lip of blastopore (D) None of the above
- 87. The negative physiological changes in the body are:**
(A) Induction (B) Aging
(C) Syndrome (D) None of the above
- 88. The study of aging is called:**
(A) Physiology (B) Morphology
(C) Gerontology (D) Herpetology
- 89. Which of the followings can slow down the process of aging?**
(A) Smoking (B) Over diet
(C) Exercise (D) Sleep
- 90. Which of the followings possesses the greatest power of regeneration?**
(A) Reptiles (B) Amphibians
(C) Man (D) Sponges

- 91. Lobster can regenerate only:**
(A) Mouth (B) Legs
(C) Claw (D) Wings
- 92. Earth worm can regenerate:**
(A) Skin (B) Tail
(C) Setae (D) Head
- 93. Salamander can regenerate:**
(A) Head (B) Limbs
(C) Tail (D) Skin
- 94. Lizard can regenerate:**
(A) Head (B) Limbs
(C) Tail (D) Skin
- 95. Man can regenerate:**
(A) Skin (B) Limbs
(C) Tail (D) Head
- 96. Regeneration in plant is confined to:**
(A) Roots (B) Stems
(C) Leaves (D) All of the above
- 97. Regeneration by dedifferentiated cells takes place in:**
(A) Prawn (B) Salamander
(C) Earth worm (D) Star fish
- 98. The branch which deals with the study of abnormal structures is:**
(A) Physiology (B) Teratology
(C) Gerontology (D) Herpetology
- 99. Haemophilia is caused due to abnormalities in:**
(A) Hormone (B) Gene
(C) Metabolism (D) Environment
- 100. The syndrome which leads to tallness and aggressiveness is:**
(A) XXY (B) XO
(C) XYY (D) XXX

- 101. Tetrogens are:**
- (A) Genetic factors (B) Environmental factors
(C) Hormonal facts (D) Metabolic factors
- 102. Match tetrogen with the deficiency of one of the following:**
- (A) Insulin (B) Gene
(C) Nutritional (D) None
- 103. The condition of small skull is:**
- (A) Haemophilia (B) Cleft palate
(C) Microcephaly (D) Polydactyl
- 104. Match harelip with one of the followings:**
- (A) Haemophilia (B) Cleft palate
(C) Microcephaly (D) Polydactyl
- 105. The intercalary meristem is:**
- (A) Meristem present at the tip of roots
(B) Meristem present at the tip of stem
(C) Meristem present at the base of inter node
(D) Meristem present in the vascular tissues
- 106. Indeterminate growth is:**
- (A) Growth stops after some times (B) Growth stops but starts again
(C) Growth never stop (D) Growth continues during youth age
- 107. Xylem and phloem are formed in:**
- (A) Phase of cell division (B) Phase of cell elongation
(C) Phase of maturation (D) Phase of differentiation
- 108. Differentiation means:**
- (A) Formation of similar cells from different cells
(B) Formation of different tissues from similar cells
(C) Formation of similar tissues from similar cells
(D) None of the above

- 109. Growth correlation means:**
- (A) One part inhibit the growth of other part
 - (B) One part promote the growth of the other part
 - (C) One part affects the growth of the other part
 - (D) All of the above
- 110. Discoidal cleavage means:**
- (A) All the part of egg takes part in cleavage
 - (B) Only Whitish of egg takes part in cleavage
 - (C) Only yellow of egg takes part in cleavage
 - (D) Only disc like part takes part in cleavage
- 111. Primitive streak forms:**
- (A) Digestive system of embryo
 - (B) Muscles of embryo
 - (C) It does not form any structure
 - (D) It supports the embryo
- 112. Grey crescent marks the:**
- (A) Formation of nervous system
 - (B) Formation of blastopore
 - (C) Formation of blastocoel
 - (D) None of the above
- 113. Grey equatorial cytoplasm forms:**
- (A) Larval epidermis
 - (B) Muscles cells
 - (C) Development of gut
 - (D) Notochord and neural tube
- 114. The role of cytoplasm in development is:**
- (A) Acts as template to form new structure
 - (B) Receives information from nucleus
 - (C) Turns the genes on and off
 - (D) Does not take part in development
- 115. Which of the following is not aging?**
- (A) Loss of hair pigment
 - (B) Dryness of skin
 - (C) Increase of number of cells
 - (D) Increase of body weight
- 116. Planaria has:**
- (A) Differentiated cells for regeneration
 - (B) Undifferentiated cells for regeneration
 - (C) Special cells for regeneration
 - (D) None of the above

Answers

Sr.	Ans.								
1.	(B)	2.	(C)	3.	(C)	4.	(C)	5.	(A)
6.	(D)	7.	(D)	8.	(D)	9.	(C)	10.	(C)
11.	(A)	12.	(A)	13.	(A)	14.	(C)	15.	(D)
16.	(A)	17.	(C)	18.	(B)	19.	(D)	20.	(D)
21.	(D)	22.	(A)	23.	(A)	24.	(B)	25.	(D)
26.	(C)	27.	(A)	28.	(A)	29.	(A)	30.	(D)
31.	(B)	32.	(C)	33.	(B)	34.	(A)	35.	(B)
36.	(D)	37.	(D)	38.	(B)	39.	(A)	40.	(A)
41.	(D)	42.	(B)	43.	(B)	44.	(C)	45.	(C)
46.	(B)	47.	(A)	48.	(C)	49.	(B)	50.	(D)
51.	(A)	52.	(C)	53.	(C)	54.	(D)	55.	(D)
56.	(C)	57.	(C)	58.	(C)	59.	(B)	60.	(B)
61.	(D)	62.	(A)	63.	(B)	64.	(C)	65.	(A)
66.	(B)	67.	(B)	68.	(A)	69.	(C)	70.	(B)
71.	(B)	72.	(C)	73.	(B)	74.	(C)	75.	(A)
76.	(B)	77.	(B)	78.	(C)	79.	(A)	80.	(D)
81.	(C)	82.	(C)	83.	(B)	84.	(C)	85.	(C)
86.	(B)	87.	(B)	88.	(C)	89.	(C)	90.	(D)
91.	(C)	92.	(D)	93.	(B)	94.	(C)	95.	(A)
96.	(D)	97.	(C)	98.	(B)	99.	(B)	100.	(C)
101.	(B)	102.	(C)	103.	(C)	104.	(B)	105.	(B)
106.	(D)	107.	(D)	108.	(B)	109.	(D)	110.	(D)
111.	(C)	112.	(B)	113.	(D)	114.	(C)	115.	(D)
116.	(B)								

SCHOOLZ



CHROMOSOMES AND DNA

- Chromosomes were first observed by:**
(A) W.S. Sutton (B) Robert Brown
(C) Walther Fleming (D) Strasberger
- Walther Fleming discovered chromosomes in larva of:**
(A) Frog (B) Sea urchin
(C) Star fish (D) Salamander
- The number of chromosomes in some ferns is:**
(A) 32 (B) 500
(C) 400 (D) 0
- Number of chromosomes in Sugar cane is:**
(A) 48 (B) 100
(C) 80 (D) 40
- Number of chromosomes in mouse is:**
(A) 45 (B) 35
(C) 40 (D) 30
- The karyotypes of a chromosomes are:**
(A) Size (B) Number
(C) Position of centromere (D) All of the above
- The chromosome in which centromere is present near the centre of chromatids is:**
(A) Acrocentric (B) Telocentric
(C) Sub metacentric (D) Metacentric
- The chromosome with centromere near the end of chromatids is:**
(A) Acrocentric (B) Telocentric
(C) Sub metacentric (D) Metacentric

9. **The amount of DNA in chromosomes is:**
(A) 20% (B) 40%
(C) 60% (D) 80%
10. **A typical chromosome contain nucleotide about:**
(A) 100 million (B) 120 million
(C) 140 million (D) 160 million
11. **The bead like structure present in the chromosome is:**
(A) Histone (B) Nucleosome
(C) Nucleolus (D) None of the above
12. **Number of histone protein molecules in single nucleosomes are:**
(A) 6 (B) 8
(C) 9 (D) 10
13. **The structure formed by super coiling of DNA is:**
(A) Nucleosome (B) Chromatin
(C) Chromosome (D) All of the above
14. **The highly condensed portion of chromatin is called:**
(A) Euchromatin (B) Heterochromatin
(C) Both (A) and (B) (D) None of the above
15. **The part of chromosome whose genes are expressed is called:**
(A) Euchromatin (B) Heterochromatin
(C) Both (A) and (B) (D) None of the above
16. **“The central role of chromosome in heredity” was suggested by:**
(A) Walter Sutton (B) Walther Fleming
(C) Mendel (D) Karl Correns
17. **Chromosomal theory of heredity was proposed by:**
(A) Walter Sutton (B) Karl Correns
(C) Mendel (D) Walther Fleming
18. **The strong evidence in support of chromosomal theory of inheritance was given by:**
(A) Walter Sutton (B) T.H Morgan
(C) Mendel (D) Karl Correns

- 19. Experiments on mice were performed by:**
- (A) Wlater Sutton (B) Oswald Avery
(C) Fred Griffith (D) Karl Correns
- 20. Transforming principle was formulated by:**
- (A) Oswald Avery (B) Fred Griffith
(C) Karl Correns (D) Walter Sutton
- 21. The transforming activity is destroyed due to:**
- (A) Protein (B) DNA
(C) Carbohydrates (D) Lipids
- 22. Experiments on bacteriophage were performed by:**
- (A) Walter Sutton (B) Hershy and Chase
(C) Fred Griffith (D) Karl Correns
- 23. In the next generation of phage virus, the virus found radioactive were with:**
- (A) S³⁴ (B) S³⁵
(C) P³¹ (D) P³²
- 24. DNA was discovered in 1869 by:**
- (A) Walter Sutton (B) Rosalind Franklin
(C) F. Miescher (D) Karl Correns
- 25. Basic structure of nucleic acid was determined by:**
- (A) P.A. Levene (B) Walther Fleming
(C) F. Miescher (D) Watson and Crick
- 26. X-ray diffraction technique was used by:**
- (A) Walter Sutton (B) Rosalin Franklin
(C) F. Miescher (D) Karl Correns
- 27. Double helical structure of DNA was proposed by:**
- (A) P.A. Levene (B) Walther Fleming
(C) F. Miescher (D) Watson and Crick
- 28. The diameter of DNA molecule is:**
- (A) 2 nm (B) 3 nm
(C) 4 nm (D) 4 nm

- 29. Number of hydrogen bonds formed between Guanine and Cytosine are:**
(A) 1 (B) 2
(C) 3 (D) 4
- 30. Number of hydrogen bonds formed between Adenine and Thymine are:**
(A) 1 (B) 2
(C) 3 (D) 4
- 31. The base pair stack is apart:**
(A) 0.24 nm (B) 0.34 nm
(C) 0.35 nm (D) 0.36 nm
- 32. The model of DNA replication in which one strand is conserved and other is synthesized is:**
(A) Conservative (B) Semi-conservative
(C) Dispersive (D) None of the above
- 33. In semi-conservative model the strands are separated and act as:**
(A) Enzyme (B) Tool
(C) Model (D) Finger prints
- 34. The model in which both strands are preserved is:**
(A) Conservative (B) Semi-conservative
(C) Dispersive (D) None of the above
- 35. The model in which both strands break is:**
(A) Dispersive (B) Conservative
(C) Semi-conservative (D) None of the above
- 36. The semi conservative model of DNA was proved by:**
(A) P.A. Levene (B) Meselson - Stahl
(C) F. Miescher (D) Watson and Crick
- 37. Meselson and Stahl used radioactive isotope of:**
(A) Carbon (B) Phosphorus
(C) Sulphur (D) Nitrogen
- 38. The enzyme which attaches the fragments of DNA is:**
(A) DNA polymerase I (B) Primase
(C) Ligase (D) DNA polymerase II

- 39. The true replicating enzyme is:**
(A) DNA polymerase III (B) Ligase
(C) Primase (D) DNA polymerase II
- 40. The enzyme which plays a supporting role in DNA replication is:**
(A) DNA polymerase I (B) Pirmase
(C) Ligase (D) DNA polymerase II
- 41. The DNA polymerase adds how many nucleotides to the end?**
(A) 2 (B) 3
(C) 4 (D) 5
- 42. The strand which elongate towards replication fork is:**
(A) Leading strand (B) Lagging strand
(C) Both (A) and (B) (D) None of the above
- 43. The length of Okazaki fragments is:**
(A) 100-200 nucleotide (B) 200-300 nucleotide
(C) 300-400 nucleotide (D) 400-500 nucleotide
- 44. Okazaki fragment is a:**
(A) RNA (B) DNA
(C) Protein (D) Enzyme
- 45. Okazaki fragments are synthesise by:**
(A) DNA polymerase I (B) Pirmase
(C) Ligase (D) DNA polymerase III
- 46. The disease alkaptonuria was studied by:**
(A) Beadle and Tatum (B) Meselson - Stahl
(C) Garrod and Bateson (D) Watson and Crick
- 47. Experiments on Neurospora were performed by:**
(A) Beadle and Tatum (B) Meselson - Stahl
(C) Garrod and Bateson (D) Watson and Crick
- 48. Match homogenetic acid with one of the followings:**
(A) Hemophilia (B) Anemia
(C) Alkaptonuria (D) Tay Sach's disease

- 49. Which of the followings is absent in minimal medium?**
- (A) Sugar (B) Ammonia
(C) Enzymes (D) Vitamins
- 50. Minimal medium was prepared by:**
- (A) Beadle and Tatum (B) Meselson - Stahl
(C) Garrod and Bateson (D) Watson and Crick
- 51. One gene encodes for one:**
- (A) Enzyme (B) Protein
(C) Polypeptide (D) Polysaccharide
- 52. Sequence of amino acids in insulin molecules were determined by:**
- (A) Vernon Ingram (B) Sanger
(C) P.A. Levene (D) F. Miescher
- 53. Sickle cell anemia was discovered by:**
- (A) Vernon Ingram (B) Sanger
(C) P.A. Levene (D) F. Miescher
- 54. Sickle cell anemia is caused due to change of glutamic acid to:**
- (A) Histidine (B) Leucine
(C) Valine (D) Proline
- 55. Central dogma is composed of:**
- (A) Protein (B) DNA
(C) mRNA (D) All of the above
- 56. The synthesis of protein is called:**
- (A) Replication (B) Transcription
(C) Translation (D) None of the above
- 57. The synthesis of RNA from DNA is:**
- (A) Transcription (B) Replication
(C) Translation (D) None of the above
- 58. Anticodons are present on:**
- (A) mRNA (B) rRNA
(C) tRNA (D) None of the above

- 59. Codes are present on:**
- (A) mRNA (B) rRNA
(C) tRNA (D) None of the above
- 60. The strand which is transcribed during transcription is:**
- (A) Leading strand (B) Antisense strand
(C) Sense strand (D) Lagging strand
- 61. Coding strand is:**
- (A) Leading strand (B) Antisense strand
(C) Sense strand (D) Lagging strand
- 62. mRNA is synthesized by:**
- (A) RNA Polymerase I (B) RNA Polymerase II
(C) RNA Polymerase III (D) None of the above
- 63. tRNA is synthesized by:**
- (A) RNA Polymerase I (B) RNA Polymerase II
(C) RNA Polymerase III (D) None of the above
- 64. Transcription starts at:**
- (A) Operator (B) Promoter
(C) Enhancer (D) None of the above
- 65. The binding site is:**
- (A) TTGGC (B) TTGACA
(C) TTGCAA (D) TTGAAC
- 66. RNA polymerase has subunit:**
- (A) Alpha factor (B) Sigma factor
(C) Beta factor (D) Gama factor
- 67. Which of the followings is a stop signal for transcription?**
- (A) CA (B) GA
(C) GC (D) TA
- 68. Cap in mRNA is:**
- (A) Poly A (B) Poly C
(C) Methyl GTP (D) Methyl ATP

- 69. Tail of mRNA is:**
- (A) Poly A (B) Poly C
(C) Methyl GTP (D) Methyl ATP
- 70. Genetic code is combination of:**
- (A) Two nucleotides (B) Three nucleotides
(C) Four nucleotides (D) All of the above
- 71. Total number of genetic codes is:**
- (A) 43 (B) 60
(C) 64 (D) 68
- 72. Which of these initiation code?**
- (A) AUU (B) AUG
(C) UGA (D) UCC
- 73. Which of the followings is not termination or non-sense code?**
- (A) UAA (B) UAG
(C) UCC (D) UGA
- 74. Which of the followings is mismatched for genetic code?**
- (A) Crick (B) Watson
(C) Nirenberg (D) Philip Leader
- 75. The code of arginine is:**
- (A) CAU (B) CCU
(C) CGU (D) CAA
- 76. The genetic code for alanine is:**
- (A) GUU (B) GUA
(C) GUC (D) GU
- 77. Genetic code for phenylalanine is:**
- (A) CCC (B) UUU
(C) AAA (D) GGG
- 78. Genetic code for glycine is:**
- (A) UUU (B) GCU
(C) GCA (D) GGG

- 79. The site of ribosome where peptide bond is formed is:**
(A) A site (B) P site
(C) E site (D) None of the above
- 80. Empty tRNA is present in:**
(A) A site (B) P site
(C) E site (D) None of the above
- 81. First amino acid in the synthesis of protein is:**
(A) Glycine (B) Methionine
(C) Alanine (D) Phenylalanine
- 82. The binding of tRNA to ribosomal unit is controlled by:**
(A) tRNA synthase (B) Initiation factor
(C) Elongation factor (D) Termination factor
- 83. Which of the followings helps the tRNA to attach on exposed mRNA code at A site:**
(A) tRNA synthase (B) Initiation factor
(C) Elongation factor (D) Termination factor
- 84. The movement of ribosome to next code is controlled by:**
(A) Termination factor (B) Elongation factor
(C) Initiation factor (D) tRNA synthase
- 85. The ribosome moves in a direction of mRNA:**
(A) 3' (B) 4'
(C) 5' (D) 6'
- 86. The termination codes are recognized by:**
(A) Termination factor (B) Elongation factor
(C) Initiation factor (D) Releasing factor
- 87. If the DNA of an human adult is lined up end to end, it will stretch nearly:**
(A) 50 billion km (B) 100 billion km
(C) 200 billion km (D) 300 billion km
- 88. The substitution of one or more bases of DNA is called:**
(A) Insertion (B) Point mutation
(C) Deletion (D) Transposition

- 89. The addition of one or a few bases is:**
- (A) Insertion (B) Point mutation
(C) Deletion (D) Transposition
- 90. Change in gene position is:**
- (A) Insertion (B) Point mutation
(C) Deletion (D) Transposition
- 91. The change of chromosomal number is:**
- (A) Deletion (B) Point mutation
(C) Insertion (D) Aberration
- 92. Which of the followings is not mutagen?**
- (A) Chemicals (B) Radiations
(C) Water (D) None of the above
- 93. Sickle anemia is a:**
- (A) Insertion (B) Point mutation
(C) Deletion (D) Transposition
- 94. The disease which causes mental retardation is:**
- (A) Sickle cell anemia (B) Diabetes
(C) Phenylketouria (D) None of the above
- 95. Chromosomal theory of inheritance suggests that:**
- (A) Genes are present on DNA
(B) Genes are present on chromatids
(C) Genes are present on chromosomes
(D) All of the above
- 96. The objection on chromosomal theory of inheritance was:**
- (A) There are more chromosomes but less gene
(B) There are more gene but less chromosomes
(C) Each chromosome carry only one gene
(D) None of the above
- 97. The strange result of T.H. Morgan was:**
- (A) All the male were red eyed (B) All the female were white eyed
(C) Neither of female white eyed (D) All of the above

- 98. Which of the following is incorrect observation of experiments by Avery and coworkers?**
- (A) Transforming activity continues after destruction of protein
 - (B) Transforming activity continues after destruction of lipids
 - (C) Transforming activity continues after destruction of DNA
 - (D) Transforming activity continues after destruction of carbohydrates
- 99. Which is incorrect about Watson and Crick model?**
- (A) DNA is double helix
 - (B) Base pairing is purine and pyrimidine
 - (C) DNA is composed of parallel strands
 - (D) Base pairs are planar
- 100. The semi conservative model is:**
- (A) Both strands are synthesized
 - (B) None of the strands is synthesized
 - (C) Only one strand is synthesized
 - (D) None of the above
- 101. Meselson and Stahl found that the DNA collected immediately after transfer was dense because:**
- (A) Both strands contain N^{14}
 - (B) Both strands contain N^{15}
 - (C) One strand is N^{14} and other N^{15}
 - (D) All of the above
- 102. Okazaki fragments are formed in lagging strand because:**
- (A) Lagging strand does not allow continuous replication
 - (B) Lagging strand is 3 to 5 direction
 - (C) Lagging strand is 5 to 3 direction
 - (D) Lagging strand is placed near to leading strand
- 103. Which of the followings does not come within central dogma?**
- (A) Synthesis of DNA
 - (B) Synthesis of mRNA
 - (C) Synthesis of protein
 - (D) All of the above
- 104. The opposite strand is called coding strand or sense strand in transcription because:**
- (A) It has opposite codes of template strand
 - (B) It has similar codes as of template strand
 - (C) Its codes are similar to mRNA codes
 - (D) Its codes are opposite to mRNA codes

- 105. Which structure becomes visible when cell starts dividing?**
(A) Chromosomes (B) Cell membrane
(C) Nucleus (D) Nuclear membrane
- 106. The centromeric position divides chromosomes into how many type?**
(A) 2 (B) 6
(C) 4 (D) 3
- 107. The bond that exists between N₂ bases of DNA is:**
(A) Covalent (B) Hydrogen
(C) Ionic (D) Phosphodiester
- 108. The replication of DNA is always from:**
(A) 5' – 3' (B) 3' – 5'
(C) Both (D) None
- 109. Attachment of Okazaki fragments to DNA's lagging strand is facilitated by:**
(A) Ligase (B) Polymerase III
(C) Polymerase II (D) DNA ase
- 110. Sequence of specific nucleotide that results specific proteins is called:**
(A) Nucleoside (B) Gene
(C) Chromosomes (D) Nucleotides
- 111. Formation of RNA from DNA is a process called:**
(A) Transcription (B) None
(C) Translation (D) Replication
- 112. UAA represents:**
(A) Non-sense codon (B) Stop codon
(C) Both (A) and (B) (D) Promoters
- 113. The caps and tails attached to mRNA protect it from:**
(A) None (B) Ligases
(C) Nucleases and phosphatases (D) Polymerases
- 114. In 1956 Vernon Ingram discovered molecular basis of:**
(A) All (B) Phenylketonuria
(C) Sickle cell anemia (D) Cancer

- 115. The strand of DNA being transcribed is called template or:**
(A) Antisense (B) Sense
(C) Both (A) and (B) (D) Coding
- 116. If mutation occurs in one or few base pairs then it is called:**
(A) Point mutation (B) Line mutation
(C) Stop mutation (D) None
- 117. A 10 nucleotide sequence i.e., RNA primer is constructed by:**
(A) Polymerase III (B) Primase
(C) DNA ligase (D) Synthetase
- 118. The overall stability of DNA is due to:**
(A) Ionic bond (B) Hydrophobic interaction
(C) Phosphodiester bond (D) None
- 119. DNA was first discovered in 1869 by:**
(A) P.A. Levene (B) Watson and crick
(C) F. Miescher (D) Franklind
- 120. Mendel's work was rediscovered in:**
(A) 1869 (B) 1899
(C) 1920 (D) 1900
- 121. Histones are positively charged due to:**
(A) Lysine, serine (B) Lysine, glutamine
(C) Arginine, lysine (D) Arginine, proline
- 122. Chromosomes consist of DNA and protein in:**
(A) 60% – 30% (B) 20% – 80%
(C) 40% – 60% (D) 90% – 10%
- 123. Human chromosomes have how many nucleotides?**
(A) 10 (B) 1000
(C) 40 million (D) 140 million
- 124. In leading strand the nucleotides are being continuously added to which growing end?**
(A) 3' (B) 5'
(C) Both (D) None

125. Genes:

- (A) Locus (B) DNA model
(C) Meselson and Stahl (D) DNA polymerases

126. Virulent S. Pneumoniae:

- (A) Meselson and Stahl (B) DNA polymerases
(C) S form (D) Locus

127. Watson and crick:

- (A) Locus (B) DNA polymerases
(C) DNA model (D) Meselson and Stahl

128. DNA replication:

- (A) Locus (B) Meselson and Stahl
(C) DNA polymerases (D) S form

129. Penicillum:

- (A) 1 chromosome pair (B) Drosophila
(C) Nucleotide (D) F. Miescher

130. Euchromatin:

- (A) Open configuration (B) Nucleotide
(C) F. Miescher (D) 1 chromosome pair

131. T.H. Morgan:

- (A) 1 chromosome pair (B) Nucleotide
(C) F. Miescher (D) Drosophila

132. Nuclein:

- (A) Drosophila (B) 1 chromosome pair
(C) Nucleotide (D) F. Miescher

133. PO₄-sugar-base:

- (A) 2 nm (B) Nucleotide
(C) DNA replication (D) Prokaryotes

134. N₂ bases:

- (A) 3.4 nm (B) 2 nm
(C) Nucleotide (D) DNA replication

135. M. Meselson:

- (A) DNA replication (B) Nucleotide
(C) Prokaryotes (D) 2 nm

- 136. 1000-2000 Okazaki fragment:**
(A) Prokaryotes (B) Nucleotide
(C) DNA replication (D) 2 nm
- 137. Homogentistic acid:**
(A) Transcription (B) Nucleosomes
(C) Alkaptonuria (D) Metacentric
- 138. 200 nucleotide + 8 histones:**
(A) Submetacentric (B) Transcription
(C) Nucleosomes (D) Metacentric
- 139. Equal arms:**
(A) Alkaptonuria (B) Nucleosomes
(C) Transcription (D) Metacentric
- 140. Polymerase + Promotor**
(A) Metacentric (B) Nucleosomes
(C) Submetacentric (D) Transcription
- 141. Genetic code:**
(A) tRNA (B) Human cell
(C) mRNA (D) Promotor sequence
- 142. 45 tRNA:**
(A) Promotor sequence (B) tRNA
(C) Human cell (D) mRNA
- 143. Coding strand:**
(A) tRNA (B) mRNA
(C) Human cell (D) Sense strand
- 144. TATAAT:**
(A) tRNA (B) Promotor sequence
(C) mRNA (D) Human cell
- 145. Initiation of transcription:**
(A) Sigma factor (B) GC + AT base pairs
(C) U ribonucleotide (D) Core enzyme
- 146. Stop signal:**
(A) GC + AT base pairs (B) 3' end
(C) U ribonucleotide (D) Core enzyme

147. Poly A tail:

- (A) Core enzyme
(B) U ribonucleotide
(C) 3' end
(D) Sigma factor

148. Transcription bubble:

- (A) Uriconucleotide
(B) Core enzyme
(C) Sigma factor
(D) GC + AT base pairs

149. UAG:

- (A) Stop codon
(B) Proline
(C) Alanine
(D) Anticodon

150. tRNA:

- (A) Proline
(B) Alanine
(C) Anticodon
(D) Stop codon

151. AUG:

- (A) Alanine
(B) Proline
(C) Stop codon
(D) Initiation codon

152. GCC:

- (A) Proline
(B) Alanine
(C) Anticodon
(D) Stop codon

153. Phenylketonuria:

- (A) ACC
(B) Peptidyl site
(C) Phenylalanine
(D) Chromosomal aberration

154. Inversion:

- (A) Chromosomal aberration
(B) 1000 nucleotides/sec
(C) Phenylalanine
(D) Peptidyl site

155. P-site:

- (A) Peptidyl site
(B) 1000 nucleotides/sec
(C) ACC
(D) Chromosomal aberration

156. Polymerase III:

- (A) Peptidyl site
(B) Phenylalanine
(C) 1000 nucleotides/sec
(D) ACC

Answers

Sr.	Ans.								
1.	(C)	2.	(D)	3.	(B)	4.	(C)	5.	(C)
6.	(D)	7.	(C)	8.	(A)	9.	(B)	10.	(C)
11.	(B)	12.	(B)	13.	(B)	14.	(B)	15.	(A)
16.	(D)	17.	(A)	18.	(B)	19.	(C)	20.	(A)
21.	(B)	22.	(B)	23.	(D)	24.	(C)	25.	(A)
26.	(B)	27.	(D)	28.	(A)	29.	(C)	30.	(B)
31.	(B)	32.	(B)	33.	(C)	34.	(A)	35.	(A)
36.	(B)	37.	(D)	38.	(C)	39.	(A)	40.	(A)
41.	(B)	42.	(A)	43.	(A)	44.	(B)	45.	(D)
46.	(C)	47.	(A)	48.	(C)	49.	(C)	50.	(A)
51.	(C)	52.	(B)	53.	(A)	54.	(C)	55.	(D)
56.	(C)	57.	(A)	58.	(C)	59.	(A)	60.	(B)
61.	(C)	62.	(B)	63.	(C)	64.	(B)	65.	(B)
66.	(B)	67.	(C)	68.	(C)	69.	(A)	70.	(B)
71.	(C)	72.	(B)	73.	(C)	74.	(B)	75.	(C)
76.	(D)	77.	(B)	78.	(D)	79.	(B)	80.	(C)
81.	(B)	82.	(B)	83.	(C)	84.	(B)	85.	(A)
86.	(D)	87.	(B)	88.	(B)	89.	(A)	90.	(D)
91.	(D)	92.	(C)	93.	(B)	94.	(C)	95.	(D)
96.	(B)	97.	(C)	98.	(C)	99.	(C)	100.	(C)
101.	(B)	102.	(B)	103.	(A)	104.	(C)	105.	(A)
106.	(C)	107.	(B)	108.	(A)	109.	(A)	110.	(B)
111.	(A)	112.	(C)	113.	(C)	114.	(C)	115.	(A)
116.	(D)	117.	(B)	118.	(B)	119.	(C)	120.	(D)

Sr.	Ans.								
121.	(C)	122.	(C)	123.	(D)	124.	(A)	125.	(A)
126.	(C)	127.	(C)	128.	(C)	129.	(A)	130.	(A)
131.	(C)	132.	(D)	133.	(B)	134.	(A)	135.	(A)
136.	(A)	137.	(C)	138.	(C)	139.	(D)	140.	(D)
141.	(C)	142.	(C)	143.	(D)	144.	(B)	145.	(A)
146.	(C)	147.	(C)	148.	(D)	149.	(A)	150.	(C)
151.	(D)	152.	(B)	153.	(C)	154.	(A)	155.	(A)
156.	(C)								

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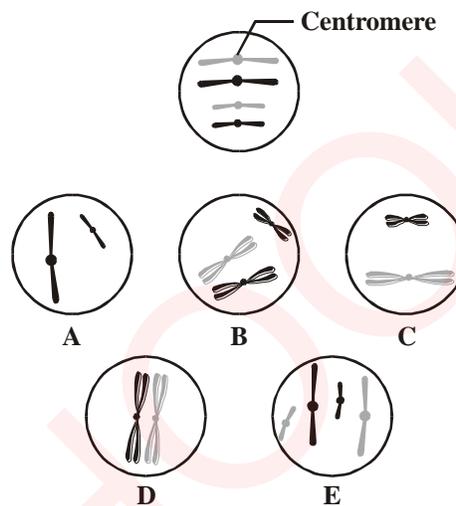


21
CHAPTER

CELL CYCLE

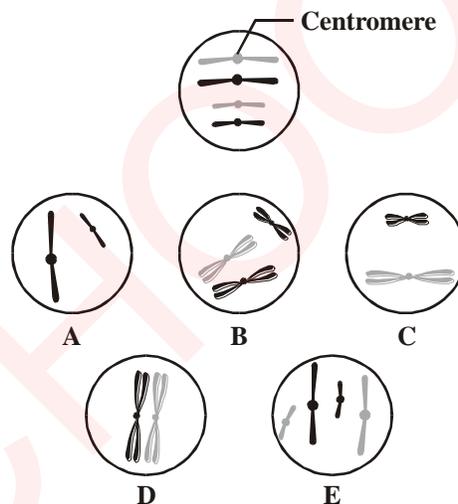
- The centromere is a region in which:**
 - Chromatids remain attached to one another until anaphase
 - Metaphase chromosomes become aligned at the metaphase plate
 - Chromosomes are grouped during telophase
 - The nucleus is located prior to mitosis
- What is a chromatid?**
 - A chromosome in G1 of the cell cycle
 - A replicate chromosome
 - A chromosome found outside the nucleus
 - A special region that holds two centromeres together
- Starting with a fertilized egg (zygote), a series of five cell divisions would produce an early embryo with how many cells?**
 - 4
 - 8
 - 16
 - 32
- If there are 20 chromatids in a cell, how many centromeres are there?**
 - 10
 - 20
 - 30
 - 40
- For a newly evolving protist, what would be the advantage of using eukaryote-like cell division rather than binary fission?**
 - Binary fission would not allow for the formation of new organisms
 - Cell division would allow for the orderly and efficient segregation of multiple linear chromosomes
 - Cell division would be faster than binary fission
 - Binary fission would not allow the organism to have complex cells

6. **How do the daughter cells at the end of mitosis and cytokinesis compare with their parent cell when it was in G1 of the cell cycle?**
- (A) The daughter cells have half the amount of cytoplasm and half the amount of DNA
- (B) The daughter cells have half the number of chromosomes and half the amount of DNA
- (C) The daughter cells have the same number of chromosomes and half the amount of DNA
- (D) The daughter cells have the same number of chromosomes and the same amount of DNA
7. **Which figure describes homologous pairs in the nucleus?**



- (A) A and B (B) C and D
- (C) E and A (D) B and D
8. **Which term describes centrioles beginning to move apart in animal cells?**
- (A) Telophase (B) Anaphase
- (C) Metaphase (D) Interphase
9. **Which is the longest of the mitotic stages?**
- (A) Telophase (B) Anaphase
- (C) Metaphase (D) Interphase

10. Which term describes centromeres uncoupling, sister chromatids separating and the two new chromosomes moving to opposite poles of the cell?
- (A) Telophase (B) Anaphase
(C) Prometaphase (D) Metaphase
11. If cells in the process of dividing are subjected to drug colchicine, at which stage will mitosis be arrested?
- (A) Anaphase (B) Prophase
(C) Telophase (D) Metaphase
12. A cell containing 92 chromatids at metaphase of mitosis would, at its completion, produce two nuclei each containing how many chromosome?
- (A) 16 (B) 23
(C) 46 (D) 92
13. If the cell whose nuclear material is shown in figure 1 continues toward completion of mitosis, which of the following events would occur next?



- (A) Cell membrane synthesis (B) Spindle fiber formation
(C) Nuclear envelope breakdown (D) Formation of telophase nuclei
14. If there are 20 centromeres in a cell at anaphase, how many chromosomes are there in each daughter cell following cytokinesis?
- (A) 10 (B) 20
(C) 30 (D) 40

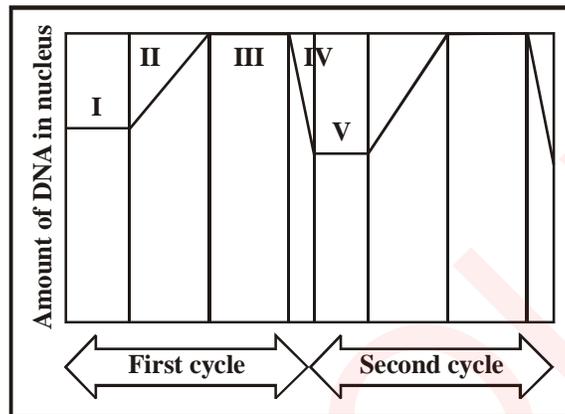
16. **The best conclusion concerning delta is that the cells:**
- (A) Contain no DNA
 - (B) Contain no RNA
 - (C) Contain only one chromosome that is very short
 - (D) Are actually in the G₀ phase
17. **Where do the microtubules of the spindle originate during mitosis in both plant and animal cells?**
- (A) Centromere
 - (B) Centrosome
 - (C) Centriole
 - (D) Chromatid
18. **If a cell has 8 chromosomes at metaphase of mitosis, how many chromosomes will it have during anaphase?**
- (A) 1
 - (B) 2
 - (C) 4
 - (D) 8
19. **Cytokinesis usually, but not always, follows mitosis. If a cell complet mitosis but not cytokinesis, the result would be a cell with:**
- (A) A single large nucleus
 - (B) High concentrations of actin and myosin
 - (C) Two abnormally small nuclei
 - (D) Two nuclei
20. **Regarding mitosis and cytokinesis, one difference between higher plants and animals is that in plants:**
- (A) The spindles contain microfibrils in addition to microtubules, whereas animal spindles do not contain microfibrils
 - (B) Sister chromatids are identical, but they differ from one another in animals
 - (C) A cell plate begins to form at telophase, whereas in animals a cleavage furrow is initiated at that stage
 - (D) Chromosomes become attached to the spindle at prophase, whereas in animals chromosomes do not become attached until anaphase
21. **The formation of a cell plate is beginning across the middle of a cell and nuclei are re-forming at opposite ends of the cell. What kind of cell is this?**
- (A) An animal cell in telophase
 - (B) An animal cell undergoing cytokinesis
 - (C) A plant cell in metaphase
 - (D) A plant cell undergoing cytokinesis
22. **Taxol, anticancer drug, disrupts microtubule formation by binding to microtubules and accelerating their assembly so surprisingly, this stops mitosis. Specifically, taxol must affect:**
- (A) The fibers of the mitotic spindle
 - (B) Anaphase
 - (C) Formation of the centrioles
 - (D) The S phase of the cell cycle

- 23. Which of the followings are primarily responsible for cytokinesis in plant cells?**
- (A) Kinetochores (B) Golgi-derived vesicles
(C) Actin and myosin (D) Centrioles and basal bodies
- 24. Chromosomes first become visible during which phase of mitosis?**
- (A) Telophase (B) Prophase
(C) Metaphase (D) Anaphase
- 25. During which phases of mitosis are chromosomes composed of two chromatids?**
- (A) From G1 of interphase through metaphase
(B) From metaphase through telophase
(C) From anaphase through telophase
(D) From G2 of interphase through metaphase
- 26. In which group of eukaryotic organisms does the nuclear envelope remain intact during mitosis?**
- (A) Seedless plants (B) Dinoflagellates
(C) Diatoms (D) (B) and (C) only
(E) (A), (B) and (C)
- 27. The measured DNA levels ranged from 3 to 6 picograms per nucleus. In which stage of the cell cycle was the nucleus with 6 picograms of DNA?**
- (A) G0 (B) G1
(C) S (D) G2
- 28. A group of cells is assayed for DNA content immediately following mitosis and is found to have an average of 8 picograms of DNA per nucleus. Those cells would have how many picograms at the end of the S phase and at the end of G2.**
- (A) 8; 16 (B) 16; 8
(C) 16; 16 (D) 12; 16
- 29. The somatic cells derived from a single-celled zygote divide by which process?**
- (A) Meiosis (B) Mitosis
(C) Replication (D) Cytokinesis alone

- 30. The chromosomes of many of the squashed onion root tip cells are plainly visible. In some cells, replicated chromosomes are aligned along the center (equator) of the cell. These particular cells are in which stage of mitosis?**
- (A) Telophase (B) Prophase
(C) Anaphase (D) Metaphase
- 31. In order for anaphase to begin, which of the following must occur?**
- (A) Chromatids must lose their kinetochores
(B) Cohesin must attach the sister chromatids to each other
(C) Cohesin must be cleaved enzymatically
(D) Kinetochores must attach to the metaphase plate
- 32. Why do chromosomes coil during mitosis?**
- (A) To increase their potential energy
(B) To allow the chromosomes to move without becoming entangled and breaking
(C) To allow the chromosomes to fit within the nuclear envelope
(D) To provide for the structure of the centromere
- 33. Which of the following best describes how chromosomes move toward the poles of the spindle during mitosis?**
- (A) The chromosomes are “reeled in” by the contraction of spindle microtubules
(B) Motor proteins of the kinetochores move the chromosomes along the spindle microtubules
(C) Non-kinetochore spindle fibers serve to push chromosomes in the direction of the poles
(D) Both (A) and (B)
- 34. Which of the followings is a function of those spindle microtubules that do not attach to kinetochores?**
- (A) Maintaining an appropriate spacing among the moving chromosomes
(B) Providing the ATP needed by the fibers attached to kinetochores
(C) Maintaining the region of overlap of fibers in the cell’s center
(D) Pulling the poles of the spindles closer to one another

35. Which of the following questions might be answered by such a method?
- (A) How many cells are produced by the culture per hour?
 - (B) What is the length of the S phase of the cell cycle?
 - (C) When is the S chromosome synthesized?
 - (D) How many picograms of DNA are made per cell cycle?
36. The research team used the setup to study the incorporation of labeled nucleotides into a culture of lymphocytes and found that the lymphocytes incorporated the labeled nucleotide at a significantly higher level after a pathogen was introduced into the culture. What did they conclude?
- (A) The presence of the pathogen made the experiment too contaminated to trust the results
 - (B) Their tissue culture methods needed to be relearned
 - (C) Infection causes lymphocytes to divide more rapidly
 - (D) Infection causes cell cultures in general to reproduce more rapidly
 - (E) Infection causes lymphocyte cultures to skip some parts of the cell cycle
37. If mammalian cells receive a go-ahead signal at the G1 checkpoint, they will:
- (A) Move directly into telophase
 - (B) Complete the cycle and divide
 - (C) Exit the cycle and switch to a non-dividing state
 - (D) Complete cytokinesis and form new cell walls
38. Cells that are in a non-dividing state are in which phase?
- (A) G0
 - (B) G2
 - (C) G1
 - (D) S
39. Which is the shortest part of the cell cycle?
- (A) G0
 - (B) G1
 - (C) S
 - (D) G2
 - (E) M
40. DNA is replicated at which stage of the cell cycle?
- (A) G0
 - (B) G1
 - (C) S
 - (D) G2

41. The “restriction point” occurs here:
 (A) G₀ (B) G₁
 (C) G₂ (D) M
42. Nerve and muscle cells are in this phase:
 (A) G₀ (B) G₁
 (C) S (D) G₂
43. In the figure, mitosis is represented by which number?



- (A) I (B) II
 (C) III (D) IV
44. Which number represents DNA synthesis in the figure above?
 (A) I (B) II
 (C) III (D) IV
45. Which number represents the point in the cell cycle during which the chromosomes are replicated in the figure above?
 (A) I (B) II
 (C) III (D) IV
46. An enzyme that attaches a phosphate group to another molecule is called:
 (A) Phosphatase (B) Phosphorylase
 (C) Kinase (D) ATPase
47. Which of the following are true concerning cells?
 (A) They do not exhibit density-dependent inhibition when growing in culture
 (B) When they stop dividing, they do so at random points in the cell cycle
 (C) They are not subject to cell cycle controls
 (D) (B) and (C) only

48. The research team established similar lymphocyte cultures from a number of human donors, including healthy teenagers of both genders, patients already suffering from long-term bacterial infections, and elderly volunteers. They found that the increase in lymphocyte incorporation after pathogen introduction was slightly lower in some of the women teenagers and significantly lower in each of the elderly persons. They repeated the study with a larger number of samples but got the same results. What might be among their conclusions?
- (A) The elderly person's samples demonstrated their lowered immune responses
 - (B) The young men had higher response because they are generally healthier
 - (C) The patient samples should have had the lowest response but did not, so the experiment is invalid
 - (D) The elderly donor samples represent cells no longer capable of any cell division
49. Cells from an advanced malignant tumor most often have very abnormal chromosomes, and often an abnormal total number of chromosomes. Why might this occur?
- (A) Cancer cells are no longer density dependent
 - (B) Cancer cells are no longer anchorage dependent
 - (C) Chromosomally abnormal cells can still go through cell cycle checkpoints
 - (D) Transformation introduces new chromosomes into cells
50. Besides the ability of some cancer cells to over proliferate, what else could logically result in a tumor?
- (A) Metastasis
 - (B) Changes in the order of cell cycle stages
 - (C) Lack of appropriate cell death
 - (D) Inability to form spindles
51. Through a microscope, you can see a cell plate beginning to develop across the middle of a cell and nuclei re-forming on either side of the cell plate. This cell is most likely:
- (A) An animal cell in the process of cytokinesis
 - (B) A plant cell in the process of cytokinesis
 - (C) An animal cell in the S phase of the cell cycle
 - (D) A bacterial cell dividing

52. **A particular cell has half as much DNA as some other cells in a mitotically active tissue. The cell in question is most likely in:**
- (A) G1 (B) G2
(C) Prophase (D) Metaphase
53. **One difference between cancer cells and normal cells is that cancer cells:**
- (A) Are arrested at the S phase of the cell cycle
(B) Continue to divide even when they are tightly packed together
(C) Cannot function properly because they are affected by density dependent inhibition
(D) Are always in the M phase of the cell cycle
54. **In the cells of some organisms, mitosis occurs without cytokinesis. This will result in:**
- (A) Cells with more than one nucleus (B) Cells that are unusually small
(C) Cells lacking nuclei (D) Destruction of chromosomes
55. **Which of the following does not occur during mitosis?**
- (A) Condensation of the chromosomes
(B) Replication of the DNA
(C) Separation of sister chromatids
(D) Separation of the spindle poles
56. **As a cell becomes larger, its:**
- (A) Volume increases faster than its surface area
(B) Surface area increases faster than its volume
(C) Volume increases, but its surface area stays the same
(D) Surface area stays the same, but its volume increases
57. **All of the following are problems that growth causes for cells except:**
- (A) DNA overload (B) Obtaining enough food
(C) Excess oxygen (D) Expelling wastes
58. **Which of the following is not a way that cell division solves the problems of cell growth?**
- (A) Cell division provides each daughter cell with its own copy of DNA
(B) Cell division increases the mass of the original cell
(C) Cell division increases the surface area of the original cell
(D) Cell division reduces the original cell's volume

- 59. Which pair is correct?**
- (A) G1 phase, DNA replication (B) G2 phase, preparation for mitosis
(C) S phase, cell division (D) M phase, cell growth
- 60. When during the cell cycle is a cell's DNA replicated?**
- (A) G1 phase (B) G2 phase
(C) S phase (D) M phase
- 61. During which phase of mitosis do the chromosomes line up along the middle of the dividing cell?**
- (A) Prophase (B) Metaphase
(C) Telophase (D) Anaphase
- 62. What is the role of the spindle during mitosis?**
- (A) It helps separate the chromosomes
(B) It breaks down the nuclear membrane
(C) It duplicates the DNA
(D) It divides the cell in half
- 63. The two main stages of cell division are called:**
- (A) Mitosis and interphase (B) Synthesis and cytokinesis
(C) The M phase and the S phase (D) Mitosis and cytokinesis
- 64. Which of the following is a factor that can stop normal cells from growing?**
- (A) Contact with other cells
(B) Growth factors
(C) A cut in the skin
(D) Cyclin that has been taken from a cell in mitosis
- 65. Which of the following explains why normal cells grown in a petri dish tend to stop growing?**
- (A) The cells lack cyclin
(B) The petri dish inhibits cell growth
(C) Contact with other cells stops cell growth
(D) Most cells grown in petri dishes have a defective p53

- 66. Cyclins are a family of closely related proteins that:**
(A) Regulate the cell cycle (B) Cause cancer
(C) Produce p53 (D) Work to heat wounds
- 67. It is the period of extensive metabolic activity:**
(A) G₁ (B) G₀
(C) S (D) G₂
- 68. In human cell, average cell cycle is about:**
(A) 18 hours (B) 6 hours
(C) 24 hours (D) 12 hours
- 69. The period of cell cycle between two consecutive division is termed as:**
(A) Prophase (B) Metaphase
(C) Telophase (D) Interphase
- 70. The vesicles forming phragmoplast originate during:**
(A) Prophase (B) Metaphase
(C) Telephase (D) Inter phase
- 71. Cancer is caused mainly by mutations in:**
(A) Sex cells (B) S-phase
(C) Somatic cells (D) G₂ stage
- 72. The interphase of meiosis lacks:**
(A) G₁ stage (B) G₀ stage
(C) G₂ stage (D) S phase
- 73. Condensation of chromosomes reaches to its maximum during:**
(A) Diplotane (B) Zygotenre
(C) Leptotene (D) Diakinesis
- 74. The sex chromosome complement in individuals with Klinefelter's syndrome is:**
(A) XXY (B) XXYY
(C) XYYY (D) Xy
- 75. Mitosis is divided into:**
(A) Cytokinesis (B) Interphas
(C) Both (A) and (D) (D) Karyokinesis

- 76. A female lacking ovaries and germ cells is probably affected with:**
(A) Haemophilia (B) Klinefelter's syndrome
(C) Turner's syndrome (D) Down's syndrome
- 77. The process of meiosis is completed in how many divisions?**
(A) 3 (B) 5
(C) 2 (D) 4
- 78. The number of daughter cells produced at the end of meiosis is:**
(A) 2 (B) 8
(C) 6 (D) 4
- 79. Meiosis occurs in:**
(A) Viruses (B) Both plants and animals
(C) Plants (D) Bacteria
- 80. Small localized tumors are called:**
(A) Cancer (B) Benign
(C) Malign (D) Interdigitate
- 81. Reduction in the chromosome number occurs during:**
(A) Meiosis II (B) Mitosis
(C) Both (A) and (B) (D) Meiosis I
- 82. Crossing over occurs during:**
(A) Diplotene (B) Zygotene
(C) Pachytene (D) Leptotene
- 83. Chromatids start moving towards the respective poles in:**
(A) Metaphase (B) Prophase
(C) Anaphase (D) Diplotene
- 84. Prophase I of meiosis is further divided into how many substages?**
(A) 4 (B) 6
(C) 5 (D) 3
- 85. The proteins which become activated during cytokinesis are:**
(A) Globulin (B) Fibrin
(C) Actin and myosin (D) Hemoglobin

- 86. The length of chromosomes is:**
- (A) 0.40 – 0.80 μm (B) 1 μm – 3 μm
(C) 0.25 – 0.50 μm (D) 0.60 – 1.2 μm
- 87. Interphase:**
- (A) Aster and spindle (B) Resting phase
(C) Chromatin (D) 4.5 hours
- 88. Mitotic spindle:**
- (A) Resting phase (B) Chromatin
(C) Centromere (D) Aster and spindle
- 89. Kinetochore:**
- (A) Centromere (B) Resting phase
(C) Aster and spindle (D) 4.5 hours
- 90. G₂ phase:**
- (A) Resting phase (B) 4.5 hours
(C) Chromatin (D) Aster and spindle
- 91. Phragmoplast:**
- (A) Somatic cells (B) Plant cell
(C) Zygote (D) Pachytene
- 92. Cancer:**
- (A) Somatic cells (B) Anaphase I
(C) Plant cell (D) Pachytene
- 93. Tetrad:**
- (A) Pachytene (B) Plant cell
(C) Anaphase I (D) Zygote
- 94. Crossing over:**
- (A) Plant cell (B) Pachytene
(C) Anaphase I (D) Somatic cells
- 95. XXY:**
- (A) Turner's syndrome (B) Necrosis
(C) Klinefelter's syndrome (D) Mitosis

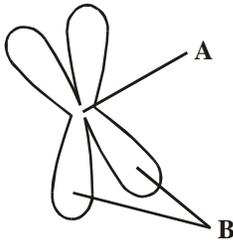
- 96. Cell death:**
(A) Necrosis (B) Klinefelter's syndrome
(C) Turner's syndrome (D) Mitosis
- 97. Tissue culture:**
(A) Klinefelter's syndrome (B) Mitosis
(C) Metastasis (D) Turner's syndrome
- 98. Tumor cells:**
(A) Klinefelter's syndrome (B) Metastasis
(C) Mitosis (D) Turner's syndrome
- 99. Karyokinesis:**
(A) Pairing (B) Leptotene
(C) Division of nucleus (D) Protein
- 100. Tubulin:**
(A) Leptotene (B) Protein
(C) Pairing (D) Cell suicide
- 101. Apoptosis:**
(A) Leptotene (B) Protein
(C) Cell suicide (D) Division of nucleus
- 102. Synapsis:**
(A) Protein (B) Pairing
(C) Leptotene (D) Division of nucleus
- 103. Meiosis I:**
(A) Rapid division (B) Cell cleavage
(C) Diplotene (D) G₁ phase
- 104. Malignant tumor:**
(A) Diplotene (B) Rapid division
(C) Cell cleavage (D) Missing X
- 105. Cytokinesis:**
(A) Missing X (B) Diplotene
(C) Rapid division (D) Cell cleavage

106. Turner's syndrome:

- (A) Missing X (B) Rapid division
(C) Cell cleavage (D) Diplotene

107. The cell cycle is the:

- (A) Time it takes for one cell to undergo mitosis
(B) Series of events that cells go through as they grow and divide
(C) Period of time between the birth and the death of a cell
(D) Period of division of cell



108. The structure labeled A in figure is called the:

- (A) Sister chromatid (B) Centromere
(C) Centriole (D) Chromosome

109. The structures labeled B in figure are called:

- (A) Sister chromatids (B) Spindles
(C) Centromeres (D) Centriole

110. During which phase(s) of mitosis are structure like the one shown in figure visible:

- (A) Prophase and metaphase (B) Anaphase and interphase
(C) Anaphase and prophase (D) Prophase and telophase

111. Which of the following is a phase of mitosis?

- (A) S phase (B) Prophase
(C) Interphase (D) G₀

112. During which phase of mitosis do the chromosomes line up along the middle of the dividing cell?

- (A) Metaphase (B) Telophase
(C) Prophase (D) Anaphase

- 113. Which of the following represents the phases of mitosis in their proper sequence?**
- (A) Interphase, prophase, metaphase, anaphase, telophase
 - (B) Prophase, metaphase, anaphase, telophase
 - (C) Interphase, prophase, metaphase, telophase
 - (D) None of the above
- 114. What is the role of the kinetochore spindle fibers during mitosis?**
- (A) It duplicates the DNA
 - (B) It divides the cell in half
 - (C) It helps separate the chromosomes
 - (D) It provides energy
- 115. The two main stages of cell division are called:**
- (A) Synthesis and cytokinesis
 - (B) Cytokinesis and mitosis
 - (C) Mitosis and interphase
 - (D) Karyokinesis and cytokinesis
- 116. One difference between cell division in plant cells and in animal cells is that plant cells have:**
- (A) Chromatin
 - (B) Centrioles
 - (C) Phragmoplast
 - (D) Contractile ring
- 117. Cancer is a disorder in which some cells have lost the ability to control their:**
- (A) Spindle fibers
 - (B) Size
 - (C) Growth rate
 - (D) Shape
- 118. Which type of tissue lines your internal organs?**
- (A) Connective
 - (B) Muscle
 - (C) Epithelial
 - (D) Spongy
- 119. Which type of tissue enables a person's fingers to move as he or she plays the piano?**
- (A) Nerve
 - (B) Connective
 - (C) Muscle
 - (D) Joints

Answers

Sr.	Ans.								
1.	(A)	2.	(A)	3.	(D)	4.	(A)	5.	(B)
6.	(C)	7.	(D)	8.	(D)	9.	(D)	10.	(B)
11.	(B)	12.	(C)	13.	(D)	14.	(A)	15.	(A)
16.	(D)	17.	(B)	18.	(D)	19.	(D)	20.	(C)
21.	(D)	22.	(B)	23.	(B)	24.	(B)	25.	(D)
26.	(A)	27.	(C)	28.	(C)	29.	(D)	30.	(D)
31.	(D)	32.	(A)	33.	(D)	34.	(D)	35.	(C)
36.	(B)	37.	(A)	38.	(A)	39.	(C)	40.	(B)
41.	(D)	42.	(A)	43.	(D)	44.	(B)	45.	(B)
46.	(B)	47.	(D)	48.	(D)	49.	(C)	50.	(A)
51.	(B)	52.	(A)	53.	(D)	54.	(A)	55.	(D)
56.	(A)	57.	(B)	58.	(B)	59.	(B)	60.	(C)
61.	(C)	62.	(A)	63.	(D)	64.	(A)	65.	(C)
66.	(A)	67.	(A)	68.	(C)	69.	(D)	70.	(B)
71.	(C)	72.	(C)	73.	(D)	74.	(A)	75.	(C)
76.	(C)	77.	(C)	78.	(D)	79.	(B)	80.	(B)
81.	(D)	82.	(C)	83.	(C)	84.	(C)	85.	(C)
86.	(C)	87.	(B)	88.	(D)	89.	(A)	90.	(B)
91.	(B)	92.	(A)	93.	(D)	94.	(B)	95.	(A)
96.	(A)	97.	(B)	98.	(B)	99.	(C)	100.	(B)
101.	(C)	102.	(B)	103.	(C)	104.	(B)	105.	(D)
106.	(A)	107.	(B)	108.	(B)	109.	(A)	110.	(A)
111.	(B)	112.	(A)	113.	(B)	114.	(C)	115.	(D)
116.	(B)	117.	(C)	118.	(C)	119.	(C)		

SCHOOLZ



VARIATION AND GENETICS

- Mendel's idea that pairs of characters separate during gamete formation is called the law of:**
 - Particulate inheritance
 - Dominance
 - Segregation
 - Independent assortment
- The allele that masks the effects of the other and the masked allele are known as:**
 - Homozygous, heterozygous
 - Homozygous, recessive
 - Dominant, recessive
 - Dominant, incomplete
- What is the most common outcome in the F₂ generation of a cross between a tall plant and a dwarf plant?**
 - 1 tall : 1 dwarf
 - 3 tall : 1 dwarf
 - 1 tall : 2 medium : 1 dwarf
 - All tall
- Two carriers of albinism have four children. One of their children is albino and the remaining three are normally pigmented. What is the probability that their next child will be albino?**
 - 0%
 - 25%
 - 75%
 - 100%
- Kathy's brother has cystic fibrosis. Her husband has no family history of cf. What is the chance that Kathy's child has inherited the cystic fibrosis?**
 - $1/2 \times 1/2 = 1/4$
 - $1/3 \times 1/2 = 1/6$
 - $2/3 \times 1/4 = 1/6$
 - $2/3 \times 1/2 = 1/3$
- The occurrence of affected individuals in every generation in a family suggests which of these traits?**
 - An autosomal dominant
 - An autosomal recessive
 - Either dominant or recessive
 - Sex-linked

7. Which of the following is an example of a dihybrid cross?
- (A) $AaBb \times aabb$ (B) $AaBb \times AaBb$
(C) $aabb \times AABB$ (D) $aabb \times aabb$
8. Which of the following phenotypic results are expected from a dihybrid cross?
- (A) 1 : 1 : 1 : 1 ratio (B) 9 : 3 : 3 : 1 ratio
(C) All dominant for both traits (D) All recessive for both traits
9. Mendel's law of which states that a random assortment of maternally and paternally derived chromosomes in meiosis results in gametes that have different combinations of these genes?
- (A) Particulate inheritance (B) Dominance
(C) Segregation (D) Independent assortment
10. Which of the following incorrectly identifies the mode of inheritance for the given genetic disease?
- (A) Distal symphalangism-dominant (B) Cystic fibrosis-recessive
(C) Albinism-recessive (D) Sickle cell-dominant
11. Approximately how many human single-gene traits and illnesses are currently known from medical reports?
- (A) 100 (B) 1000
(C) 10000 (D) 100000
12. Mendel's laws are explained by:
- (A) Chromosome behaviour in mitosis
(B) Chromosome behaviour in meiosis
(C) Cytokinesis in mitosis and meiosis
(D) Mendel's laws have not been explained
13. Which genotype is normally not found in a gamete?
- (A) AB (B) Ab
(C) aa (D) ab
14. Which of the following crosses is a test cross?
- (A) Unknown \times AA (B) Unknown \times Aa
(C) Unknown \times aa (D) Unknown \times Unknown

15. **Two phenotypically normal individuals have an affected child. What can we conclude about the parents?**
- (A) They both carried the disease allele
 - (B) They are not the parents of the child
 - (C) They are affected
 - (D) No conclusions can be drawn
16. **Which geneticist has compiled a compendium of human genetic traits called mendelian inheritance in man?**
- (A) Gregor Mendel
 - (B) Hermann Muller
 - (C) Victor McKusick
 - (D) John Hopkins
17. **Relatives who have children together have a much higher risk of having children affected by.**
- (A) Environmental condition
 - (B) Dominant condition
 - (C) Recessive condition
 - (D) Undetected condition
18. **Consider a group of 100 individuals (50 couples), all of whom carry a recessive disease allele. If 200 children were born to these couples, what percentage of the children would, theoretically, be carriers like their parents?**
- (A) 0
 - (B) 25
 - (C) 50
 - (D) 75
19. **In the cross $AaBb \times aabb$, what percentage of the offspring are expected to show a completely dominant phenotype?**
- (A) 0
 - (B) 25
 - (C) 50
 - (D) 100
20. **Consider the cross $AaBb \times AaBb$. If the alleles for both genes exhibit complete dominance, what genotypic ratio is expected in the resulting offspring?**
- (A) 1 : 1 : 1 : 1
 - (B) 9 : 3 : 3 : 1
 - (C) 3 : 6 : 3 : 1 : 2 : 1
 - (D) 1 : 2 : 1 : 2 : 4 : 2 : 1 : 2 : 1
21. **Can independent assortment be demonstrated in a monohybrid cross?**
- (A) Yes, you can observe random distribution of alleles into gametes
 - (B) Yes, you can observe random assortment of genes into gametes
 - (C) No, you must observe genes that are on the same chromosome
 - (D) No, you must examine the transmission of two or more genes

22. Which rule of probability is useful in calculating the risk that certain individuals will inherit a particular genotype?
- (A) Product (B) Summation
(C) Additive (D) None of the above is correct
23. Achondroplasia is a dominant form of dwarfism. What is the chance of having an unaffected child from two.
- (A) 0 (B) 25
(C) 50 (D) 75
24. What chance an adult sibling of a person who is a known carrier of Tay-Sachs disease, has of being a carrier?
- (A) 1/4 (B) 1/2
(C) 1/3 (D) 2/3
25. Female and male sex cells are called:
- (A) Hybrids (B) Alleles
(C) Genotypes (D) Gametes
26. What is the phenotype ratio for the offspring in this Punnett Square?

Punnett Square of Dihybrid Cross
Gametes from RrYy parent

		RY	Ry	rY	ry
Gametes from RrYy parent	Ry	 RRYY	 RRYy	 RrYY	 RrYy
	rY	 RRYy	 RRyy	 RrYy	 Rryy
	Ry	 RrYY	 RrYy	 rrYY	 rrYy
	rY	 RrYy	 Rryy	 rrYy	 rryy

F₁ cross: RrYy x RrYy

	Round yellow
	Round green
	Wrinkled yellow
	Wrinkled green

- (A) 9 round yellow; 3 round green: 3 wrinkled yellow: 1 wrinkled green
(B) 3 round yellow; 3 round green: 3 wrinkled yellow: 3 wrinkled green
(C) 3 round yellow; 9 round green: 1 wrinkled yellow: 3 wrinkled green
(D) 9 round yellow; 3 round green: 3 wrinkled yellow: 9 wrinkled green

27. When Mendel conducted his experiments, he needed to transfer pollen grains from a male reproductive organ to a female reproductive organ in a plant. What is this process called?

- (A) Cross pollination (B) Heredity
(C) Monohybrid (D) Recessive

28. What is the genotype ratio for the offspring in this Punnett Square?

	T	t
Ry	TT	Tt
Ry	Tt	tt

- (A) 2TT: 1Tt: 1tt (B) 2TT: 1Tt: 2tt
(C) 4TT: 2Tt: 1tt (D) 1TT: 2Tt: 1tt

29. Which of the following statements is not true?

- (A) If an organism has two alleles for a trait that are the same, it is said to be homozygous for that trait
(B) The way an organism looks and behaves is called its genotype
(C) A hybrid is the offspring of two parents that have different forms of a trait
(D) Dominant alleles are represented with upper-case letters

30. If Mendel had chosen more than seven traits in his plants, he might have run into some confusing results regarding:

- (A) The phenomenon of dominance
(B) The law of segregation
(C) The law of independent assortment
(D) All of the above

31. What is the major value in using a Punnett square?

- (A) Shows all gametic combinations (B) Shows genotypic ratios
(C) Shows phenotypic ratios (D) Shows (A), (B) and (C)

32. A co-dominance cross between a homozygous red and a homozygous white snapdragons produces:

- (A) Plants with 50% red and 50% white flowers
(B) Plants with red flowers
(C) Plants with pink flowers
(D) Plants with sterile flowers

33. The branch of Biology dealing with the principles that explain the similarities between parents and their progeny and differences among individuals of a species:
- (A) Inheritance (B) Heredity
(C) Genetics (D) Variation
34. Using the symbols provided below, what is the genotype of a heterozygous tall, homozygous green pod pea plant?
- (A) DdYy (B) DDYY
(C) DdYY (D) DDYy
35. Using the symbols provided below, what is the genotype of a heterozygous tall, heterozygous green pod pea plant?
- (A) DDYY (B) DdYy
(C) DdYY (D) DDYy
36. A recessive gene can be expressed if the genotype is:
- (A) Homozygous recessive (B) Homozygous dominant
(C) Heterozygous (D) (B) and (C)
37. A chestnut coloured horse crossed with a white coloured horse results in a palomino coat colour. This is an example of:
- (A) Dominant inheritance (B) Recessive inheritance
(C) Codominant inheritance (D) None of the above inheritance
38. Why was Mendel fairly certain that he had a pure-bred variety when he collected seeds from a pea plant?
- (A) The flower is self-pollinating in these plants
(B) Peas bear a large number of “offspring”
(C) Because the varieties are so distinctive
(D) He maintained extremely accurate records
39. If an organism with the genotype Ww is crossed with a Ww organism, what would be the proportion of offspring that would be heterozygous?
- (A) 1/4 (B) 1/2
(C) 3/4 (D) All would be heterozygous

- 40. Phenotype is:**
- (A) The genetic make-up of an individual
 - (B) The same for parent and offspring
 - (C) Not observable
 - (D) The appearance of an individual
- 41. If genes are not linked, a genotype of PpRr can produce how many different kinds of gametes?**
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
- 42. In humans, brown eyes (B) is dominant to blue eyes (b). A brown eyed man marries a blue eyed woman. The possible eye colours of their children are:**
- (A) All brown
 - (B) Half brown
 - (C) 3/4 brown, 1/4 blue
 - (D) Not enough information is given
- 43. Mendel was the first biologist to:**
- (A) Study the mechanics of inheritance
 - (B) Discover that chromosomes are responsible for inheritance
 - (C) Use statistical methods in analyzing his results
 - (D) All of the above
- 44. Mendel's law of segregation states that:**
- (A) Two factors for the same trait separate in the production of gametes
 - (B) Two different traits will be inherited independently of each other
 - (C) Gametes are produced by meiosis
 - (D) All of the above
- 45. If an individual has a recessive phenotype for a given trait, the genotype must be:**
- (A) Heterozygous
 - (B) Homozygous recessive
 - (C) Homozygous dominant
 - (D) Either homozygous recessive or heterozygous

- 46. The part of DNA which controls a specific character is:**
- (A) Allele (B) Gene
(C) Locus (D) Factor
- 47. The position of gene is:**
- (A) Gene (B) Allele
(C) Factor (D) Locus
- 48. Variations are produced due to:**
- (A) Allele (B) Locus
(C) Gene (D) Mutation
- 49. Partners of gene pair are:**
- (A) Allele (B) Gene
(C) Locus (D) Factor
- 50. The form of appearance of trait is:**
- (A) Gene pool (B) Genotype
(C) Phenotype (D) Mutation
- 51. Mendel selected pea because it is naturally:**
- (A) Cross fertilized (B) Self fertilized
(C) Unisexual (D) Long generation time
- 52. Which is irrelevant for pea?**
- (A) Self fertilized (B) Hermaphrodite
(C) Sharply distinct trait (D) None of the above
- 53. True breeding variety is:**
- (A) Self fertilized (B) Cross fertilized
(C) Unisexual (D) Hermaphrodite
- 54. Which of the followings is true breeding variety?**
- (A) Tt (B) Rr
(C) RR (D) Ss
- 55. The organisms produced by self cross differing in one characters are:**
- (A) True breed (B) Dihybrids
(C) Monohybrids (D) Hybrid

56. The cross in which two characters are followed at the same time is called:
- (A) Monohybrid cross (B) Reciprocal cross
(C) Dihybrid cross (D) Hybrid cross
57. When round wrinkle were crossed, it gave all round. This round is:
- (A) P₁ generation (B) F₁ generation
(C) F₂ generation (D) F₃ generation
58. When tall is crossed with dwarf, F₁ gives tall, it is:
- (A) Recessive (B) Hybrid
(C) Dominant (D) None of the above
59. Law of segregation suggests that each gametes has:
- (A) TT (B) Tt
(C) T (D) tt
60. The results of Mendelian F₁ were all:
- (A) RR (B) Rr
(C) rr (D) None of the above
61. The genetic complement of an individual is called:
- (A) Mutation (B) Phenotype
(C) Genotype (D) Gene pool
62. Total genes found in a population is:
- (A) Gene pool (B) Genotype
(C) Phenotype (D) Mutation
63. Match beanbag genetics with one of the followings:
- (A) Genotype (B) Gene pool
(C) Mutation (D) Phenotype
64. Match bean in beanbag with one of the followings:
- (A) Gene pool (B) Gene
(C) Phenotype (D) Allele
65. A sample population of 100 plants has number of alleles:
- (A) 50 (B) 100
(C) 200 (D) 400

- 66. Mendel laid the foundation of:**
- (A) Hereditary genetics (B) Classical genetics
(C) Cytological genetics (D) Modern genetics
- 67. Which of the following scientists rediscovered the work of Mendel?**
- (A) De Varies (B) Tschernimach
(C) Correns (D) All of the above
- 68. The work of Mendel remained neglected for:**
- (A) 23 years (B) 34 years
(C) 44 years (D) 54 years
- 69. The work of Mendel was rediscovered after how many years of his death is?**
- (A) 12 years (B) 14 years
(C) 16 years (D) 18 years
- 70. Which of the following characters is not studies by Mendel?**
- (A) Pod shape (B) Seed colour
(C) Plant colour (D) Flower colour
- 71. Which of the following Mendelian characters is mismatched?**
- (A) Round wrinkle (B) Purple white
(C) Green red (D) Yellow green
- 72. Mendel studied:**
- (A) *Alium cepa* (B) *Cassia fistula*
(C) *Pisum sativum* (D) *Solanum tuberosum*
- 73. The law of segregation gives phenotypic ratio in F₂ as:**
- (A) 2 : 1 (B) 4 : 1
(C) 3 : 1 (D) 1 : 2 : 1
- 74. In F₃ cross the round producing only round were:**
- (A) 1/4 (B) 1/3
(C) 1/2 (D) None of the above
- 75. In F₃ cross the 2/3 round produce:**
- (A) Round (B) Wrinkle
(C) Both round and wrinkle (D) None of the above

76. In F_3 cross the 2/3 round give ratio of:
(A) 2 : 1 (B) 4 : 1
(C) 3 : 1 (D) 1 : 2 : 1
77. Match elementon of Mendel with one of the followings:
(A) Gene (B) Allele
(C) Factor (D) Trait
78. Match particulate hereditary factor of Mendel with one of the followings:
(A) Gene (B) Factor
(C) Allele (D) Trait
79. The scientist who renamed factors as genes was:
(A) De Varies (B) Tschernimach
(C) Correns (D) Johausen
80. Which of the followings is homozygous?
(A) Tt (B) Rr
(C) RR (D) Ss
81. The trait found in 1/4 of F_2 was:
(A) RR (B) Rr
(C) rr (D) None of the above
82. The law of segregation gives genotypic ratio in F_2 as:
(A) 2 : 1 (B) 4 : 1
(C) 3 : 1 (D) 1 : 2 : 1
83. Punnett square gives Rr in F_2 as:
(A) 1/4 (B) 1/2
(C) 3/4 (D) 1/3
84. The cross used to determine the genotype is called:
(A) Monohybrid cross (B) Test cross
(C) Dihybrid cross (D) Reciprocal cross
85. If test cross gives all dominant characters it means the parent is:
(A) Homozygous recessive (B) Heterozygous
(C) Homozygous dominant (D) Heterozygous dominant

86. If test cross gives 50% dominant and 50% recessive characters it means the parent is:
- (A) Homozygous recessive (B) Heterozygous
(C) Homozygous dominant (D) Heterozygous dominant
87. In test cross if the parent whose genotypes is to be determined is heterozygous then it gives:
- (A) 1 : 1 (B) 3 : 1
(C) 1 : 2 : 1 (D) 1 : 2
88. If an organism has TtRr genotype, then which of the following gametes does not follow law of independent assortment?
- (A) TR (B) tr
(C) Rr (D) Tr
89. The ratio for law of independent assortment is:
- (A) 9 : 3 : 1 (B) 3 : 1
(C) 1 : 2 : 1 (D) 9 : 3 : 3 : 1
90. 9 : 3 : 3 : 1 ratio is given by:
- (A) P₁ (B) F₁
(C) F₃ (D) F₄
91. Blood group MN has antigen:
- (A) M (B) N
(C) MN (D) None of the above
92. If a man with blood group M marries with woman N, the offspring will be:
- (A) All M (B) All N
(C) All MN (D) Both M and N
93. The more phenotypic tissue than genotypic ratio is:
- (A) Complete dominance (B) Incomplete dominance
(C) Codominance (D) Over dominance
94. ABO blood group system was discovered by:
- (A) Carl Correns (B) Landsteiner
(C) T.H. Morgan (D) Mendel

- 95. The blood group without antigen is:**
(A) A (B) AB
(C) B (D) O
- 96. The blood group without antibody is:**
(A) A (B) AB
(C) B (D) O
- 97. The genetic basis of ABO blood group system was discovered by:**
(A) Carl Correns (B) Landsteiner
(C) T.H. Morgan (D) Bernstein
- 98. Which of the followings is not multiple allele?**
(A) ABO blood group (B) Human height
(C) MN blood group (D) Skin colour
- 99. In AB blood group $I^A I^B$ is:**
(A) Complete dominance (B) Incomplete dominance
(C) Codominance (D) Over dominance
- 100. The antiserum contains:**
(A) Antibody (B) Antigen
(C) Albumin (D) None of the above
- 101. Who for the first time found white eye mutation in *Drosophila*?**
(A) Morgan (B) Bridges
(C) Correns (D) De Varies
- 102. Which of the following traits is not sex-linked recessive?**
(A) Haemophilia (B) Colour blindness
(C) tfm syndrom (D) Hypophosphatemic ricket
- 103. Blood group A can be donated to:**
(A) B (B) AB
(C) O (D) All of the above
- 104. Blood group O can receives:**
(A) A (B) B
(C) AB (D) None of the above

- 105. Blood group AB can be donated to:**
- (A) A (B) B
(C) AB (D) All of the above
- 106. Both husband and wife have blood group A. Which of the following blood groups can be present in their offspring?**
- (A) B (B) AB
(C) O (D) None of the above
- 107. A man with blood group AB married a woman with blood group A. Which of the following blood groups cannot be found in their offspring?**
- (A) A (B) B
(C) AB (D) O
- 108. Rh blood system was discovered by:**
- (A) Carl Correns (B) Landsteiner
(C) T.H. Morgan (D) Bernstein
- 109. Rh⁺ can be donated to:**
- (A) Rh⁺ (B) Rh⁻
(C) Both (A) and (B) (D) All of the above
- 110. Rh⁻ can be donated by:**
- (A) Rh⁺ (B) Rh⁻
(C) Both (A) and (B) (D) None of the above
- 111. The gametes of F₁ are formed in ratio:**
- (A) 1 : 2 (B) 1 : 1 : 1 : 1
(C) 9 : 3 : 3 : 1 (D) 1 : 1
- 112. If a cross between round and yellow with wrinkle and green, in F₂ it gives wrinkle yellow in ratio of:**
- (A) 9/16 (B) 3/16
(C) 1/16 (D) 2/16
- 113. If a cross between round and yellow with wrinkle and green, the F₂ will give round yellow in ratio of:**
- (A) 9/16 (B) 3/16
(C) 1/16 (D) 2/16

114. If there is cross between round and yellow with wrinkle and green, the F₂ will give wrinkle green in ratio of:
- (A) 9/16 (B) 3/16
(C) 1/16 (D) 2/16
115. An albino woman was married to normal male whose father was albino. The ratio of albino in their offspring will be:
- (A) All albino (B) 3 : 1
(C) 1 : 1 (D) All normal
116. The plant 4'o clock shows:
- (A) Complete dominance (B) Incomplete dominance
(C) Codominance (D) Over dominance
117. Flower colour in 4'o clock gives ratio in F₂:
- (A) 1 : 1 (B) 3 : 1
(C) 1 : 2 : 1 (D) 9 : 3 : 3 : 1
118. The genes that expressed in heterozygous condition show:
- (A) Complete dominance (B) Incomplete dominance
(C) Codominance (D) Over dominance
119. MN blood system is an example of:
- (A) Over dominance (B) Codominance
(C) Incomplete dominance (D) Complete dominance
120. MN blood group system was discovered by:
- (A) Carl Correns (B) Landsteiner
(C) T.H. Morgan (D) Bernstein
121. Erythroblastosis foetalis can occur if marriage occurs between:
- (A) Rh⁺ male Rh⁺ female (B) Rh⁺ male Rh⁻ female
(C) Rh⁻ male, Rh⁻ female (D) Rh⁻ male Rh⁺ female
122. Erythroblastosis foetalis is characterized by the symptom of:
- (A) Fever (B) Heart problem
(C) Jaundice (D) Death of baby

123. An Rh⁻ woman is married to Rh⁺ man whose father was Rh⁻. The risks of Erythroblastosis foetalis baby can be:
- (A) 3 : 1 (B) 1 : 1
(C) 2 : 1 (D) All
124. The affect of gene pair on another gene pair present on different locus is:
- (A) Codominance (B) Epistasis
(C) Pleiotropy (D) Over dominance
125. Bombay phenotype is due to:
- (A) Codominance (B) Pleiotropy
(C) Epistasis (D) Over dominance
126. A parent has blood group A the other has blood group AB Bombay phenotype will be produced in offspring with blood group:
- (A) A (B) B
(C) AB (D) O
127. The phenomenon in which single gene affects two or more traits is:
- (A) Codominance (B) Pleiotropy
(C) Epistasis (D) Over dominance
128. In cat dominant allele W makes pure white fur. But it also makes the cat deaf. It is:
- (A) Codominance (B) Epistasis
(C) Pleiotropy (D) Over dominance
129. Which of the followings is a qualitative trait?
- (A) Human height (B) Human skin colour
(C) Red white flower (D) Cornel colour in wheat
130. Which of the followings is not continuously varying trait?
- (A) Human height (B) Red white flower
(C) Human skin colour (D) Cornel colour in wheat
131. The polygenic character is:
- (A) Tall/dwarf (B) Round/rinkle
(C) Human height (D) Diabetes

- 132. The genetics of wheat colour was studied by:**
(A) Carl Correns (B) Nilsson Ehle
(C) T.H. Morgan (D) Mendel
- 133. The wheat grain has white colour when it has:**
(A) AABbCC (B) AaBbCc
(C) aaBBcc (D) aabbcc
- 134. The wheat grain has light red colour when it has:**
(A) AABbCC (B) AaBbCc
(C) aaBBcc (D) aabbcc
- 135. The number of genes which control human skin colour is:**
(A) 2 (B) 4
(C) 6 (D) 8
- 136. Tallness in man is:**
(A) Dominant (B) Recessive
(C) Both (D) None of the above
- 137. The phenomenon in which genes are present on the same chromosomes is:**
(A) Cross over (B) Segregation
(C) Linkage (D) Independent assortment
- 138. Tong rolling trait is:**
(A) Qualitative (B) Quantitative
(C) Polygenic (D) None of the above
- 139. The linked gene does not follow:**
(A) Cross over (B) Segregation
(C) Linkage (D) Independent assortment
- 140. The linkage groups in man are:**
(A) 46 (B) 23
(C) 22 (D) 24
- 141. A man is haemophilic but his wife is normal. Their son can be:**
(A) Normal (B) Hemophilic
(C) Carrier (D) All of the above

- 142. Queen Victoria was carrier of haemophilia but his husband was normal. The ratio of haemophilic princes can be:**
- (A) 1 : 2 (B) 3 : 1
(C) 1 : 1 (D) 1 : 4
- 143. Sun light proteins are:**
- (A) Albumin (B) Opsins
(C) Histone (D) Thrombin
- 144. The genes for the blue opsin are present on autosomes number:**
- (A) 5 (B) 7
(C) 9 (D) 11
- 145. Deuteranopia is:**
- (A) Red blindness (B) Blue blindness
(C) Green blindness (D) Black blindness
- 146. Tritanopia is:**
- (A) Red blindness (B) Green blindness
(C) Blue blindness (D) Black blindness
- 147. Protonopia is:**
- (A) Red blindness (B) Blue blindness
(C) Green blindness (D) Black blindness
- 148. The partially functional opsin for red colour is:**
- (A) Protoanomalous (B) Protanopia
(C) Tritanopia (D) Deuteranomalous
- 149. The partially functional opsin for green colour is:**
- (A) Protoanomalous (B) Protanopia
(C) Tritanopia (D) Deuteranomalous
- 150. In monochromacy, the cone absent is:**
- (A) Red yellow (B) Blue green
(C) Red green (D) Red blue

151. A normal woman, whose father was colour blind, marries a colour blinded man. The ratio of their children for colour blindness can be:
- (A) 50% (B) 25%
(C) 100% (D) 75%
152. Which of the following genes produce abnormal male?
- (A) SRY (B) tfm
(C) MAT (D) None of the above
153. X-linked dominant inheritance is more common in:
- (A) Male (B) Female
(C) Both (D) None of the above
154. The genes for beard growth is:
- (A) X-linked (B) Y-linked
(C) Sex limited (D) Sex influenced
155. The trait present in both sexes but more common in one sex is:
- (A) X-linked (B) Y-linked
(C) Sex limited (D) Sex influenced
156. Which of the followings is a sex influenced trait?
- (A) Board growth (B) Colour blindness
(C) Baldness (D) Rickets
157. A bald man marries to pattern bald women. The chance of baldness in their daughter is:
- (A) 100% (B) 50%
(C) 25% (D) Zero
158. Which of the following diseases is multifactorial?
- (A) Beard growth (B) Colour blindness
(C) Baldness (D) Diabetes
159. Which of these traits zigzags from maternal grandfather through a carrier daughter to a grandson?
- (A) Autosomal (B) X-linked
(C) Y-linked (D) X and Y-linked

- 160. The percentage of type II is:**
- (A) 30% (B) 50%
(C) 80% (D) 90%
- 161. Juvenile diabetes is:**
- (A) NIDDM (B) IDDM
(C) MODY (D) None of the above
- 162. Which of the followings is autoimmune disorder?**
- (A) MODY (B) NIDDM
(C) IDDM (D) None of the above
- 163. Which of the followings is caused by mutation in glucokinase gene?**
- (A) NIDDM (B) IDDM
(C) MODY (D) None of the above
- 164. Which of the following diseases is not multifactorial?**
- (A) Diabetes (B) Blood pressure
(C) Rickets (D) None of the above
- 165. Locus is a:**
- (A) Part of DNA (B) Position of gene
(C) Partner of gene (D) Complement of genes
- 166. Phenotype is:**
- (A) Form of appearance of a trait
(B) Genetic complement of an individual
(C) Partner of gene on chromosomes
(D) None of the above
- 167. Genotype is:**
- (A) Form of appearance of a trait
(B) Genetic complement of an individual
(C) Partner of gene on chromosomes
(D) None of the above

- 168. True breeding variety is:**
- (A) Obtained by self fertilization
 - (B) It is homozygous trait
 - (C) It produces homozygous offspring
 - (D) All of the above
- 169. A tall plant is crossed with dwarf plant. In F₂ it produces:**
- (A) All tall
 - (B) 50% tall and 50% dwarf
 - (C) 75% tall and 25% dwarf
 - (D) 25% tall and 75% dwarfs
- 170. The test cross gives the ratio of 1 : 1. The individual whose genotype is to be determined is:**
- (A) Homozygous dominant
 - (B) Heterozygous dominant
 - (C) Homozygous recessive
 - (D) None of the above
- 171. Linkage is phenomenon in which:**
- (A) Genes are present on different chromosomes
 - (B) Genes are present on same chromosomes
 - (C) Genes are present on homologous chromosomes
 - (D) None of the above
- 172. Over dominance is:**
- (A) Phenotype of the heterozygous is intermediate
 - (B) One allele is completely dominant over other
 - (C) Exceed the quantity than phenotype
 - (D) Both alleles are expressed
- 173. In case of incomplete dominance:**
- (A) Phenotype of the heterozygous is intermediate
 - (B) One allele is completely dominant over the other
 - (C) Exceed the quantity than phenotype
 - (D) Both alleles are expressed
- 174. The transmission of genes governing various characters from parents to progeny is called:**
- (A) Inheritance
 - (B) Trait
 - (C) Variation
 - (D) Phenotype

- 175. Match codominance with one of the followings:**
- (A) MN blood groups system (B) ABO blood group system
(C) RH blood group system (D) All of the above
- 176. Erythroblastosis foetalis is caused:**
- (A) Rh⁻ man marries to Rh⁺ (B) Rh⁺ man marries to Rh⁻
(C) Rh⁻ man marries to Rh⁻ (D) Rh⁺ man marries to Rh⁺
- 177. The example of multiple allele is:**
- (A) MN blood group system (B) ABO blood group system
(C) RH blood group system (D) All of the above
- 178. Codominance is:**
- (A) Phenotype of the heterozygous is intermediate
(B) One allele is completely dominant over other other
(C) Exceed the quantity than phenotype
(D) Both alleles are expressed
- 179. Blood group AB can receive:**
- (A) Only blood group A (B) Only blood group B
(C) Only blood group O (D) All of the above
- 180. In epistasis:**
- (A) One gene dominates the other gene
(B) One gene interferes the affect of the other gene
(C) One gene hides the affect of the other gene
(D) All of the above
- 181. In birds:**
- (A) XX is a female (B) XO is a female
(C) XY is female (D) All of the above
- 182. A quantitative traits is:**
- (A) Continuously varying trait
(B) It is controlled by many gene
(C) It depends on the quantity of allele
(D) All of the above

- 183. A qualitative trait is:**
- (A) Continuously varying trait
 - (B) It is controlled by one gene
 - (C) It depends on the quantity of allele
 - (D) All of the above
- 184. Which is not correct for *Drosophila*?**
- (A) XO is male
 - (B) XXY is female
 - (C) XY is female
 - (D) XY is male
- 185. In pleiotropy:**
- (A) One gene dominates the other gene
 - (B) One gene interferes the affect of the other gene
 - (C) One gene hides the affect of the other gene
 - (D) One gene affects two or more traits
- 186. Sex limited trait is:**
- (A) More common in one sex
 - (B) Expressed only in one sex
 - (C) Common in both sexes
 - (D) All of the above
- 187. Which of the followings is not correct about sex-linked inheritance?**
- (A) Gene for eye colour is located on X-chromosome
 - (B) Y-chromosome is empty for gene
 - (C) Sex linked trait are more common in females
 - (D) Female can be homozygous or heterozygous
- 188. X-linked dominant character is:**
- (A) More common in males
 - (B) More common in females
 - (C) Common in both male and females
 - (D) None of the above
- 189. Reciprocal cross is one in which:**
- (A) Same sexes as the original cross
 - (B) Sexes are reversed as compared to original cross
 - (C) It is cross between dominant and recessive genes
 - (D) It is cross between two dominant genes

- 190. Morgan crossed whit eyed male with wild type female. He obtained:**
- (A) All white eye offspring (B) All red eye offspring
(C) 50% white and 50% red (D) 75% red and 25% white
- 191. MODY:**
- (A) Starts at 40 age (B) Autoimmune disorder
(C) It starts before 25 (D) It is insulin dependent
- 192. It is the basic unit of biological information:**
- (A) Gene (B) Trait
(C) Genotype (D) Phenotype
- 193. The position of a gene on the chromosome is called its:**
- (A) Focus (B) Locus
(C) Allele (D) Genotype
- 194. The two members of a gene pair are called:**
- (A) Alleles (B) Traits
(C) Characters (D) Gene pool
- 195. It is the form of appearance of a trait:**
- (A) Genotype (B) Phenotype
(C) Pleiotropy (D) Epistasis
- 196. Genotype is the genetic compliment i.e., genes in an individual for a particular:**
- (A) Trait (B) Allele
(C) Hybrid (D) None of the above
- 197. Which one of the followings is a homozygous condition?**
- (A) Rr (B) Aa
(C) I^Ai (D) rr
- 198. Which one of the followings is a heterozygous condition?**
- (A) aa (B) AA
(C) I^AI^A (D) I^AI^B
- 199. All genes or alleles found in a breeding population at a given time are collectively called:**
- (A) Gene pool (B) Genotype
(C) Phenotype (D) Multiple alleles

- 200. Mendel was born in:**
- (A) 1822 (B) 1884
(C) 1902 (D) 1910
- 201. Mendel died in:**
- (A) 1822 (B) 1884
(C) 1902 (D) 1910
- 202. Which of the followings Mendel used as an experimental organism?**
- (A) *Drosophila melanogaster* (B) *Pisum sativum*
(C) *Oryza sativa* (D) *Triticum inheritance*
- 203. Inheritance in which only one trait is involved in a cross:**
- (A) Monohybrid cross (B) Single trait inheritance
(C) Dihybrid cross (D) Two trait inheritance
- 204. If a cross follows Mendel's law of segregation, it results in genotypic ratio:**
- (A) 3 : 1 (B) 1 : 2 : 1
(C) 9 : 3 : 3 : 1 (D) 9 : 3 : 2 : 1
- 205. A cross of a dominant individual of unknown genotype with recessive individual is called:**
- (A) Test cross (B) Monohybrid cross
(C) F₁ cross (D) Dihybrid cross
- 206. If a cross follows Mendel's law of independent assortment, it results in phenotypic ratio:**
- (A) 3 : 1 (B) 1 : 2 : 1
(C) 9 : 3 : 3 : 1 (D) 9 : 3 : 2 : 1
- 207. It is the chance of an event to occur:**
- (A) Pleiotropy (B) Epistasis
(C) Dominance (D) Probability
- 208. Complete or partial absence of pigment from skin, hair and eyes in many species of mammals including man:**
- (A) Dwarfism (B) Gigantism
(C) Albinism (D) Pigmentism

- 209. Allele for albinism is:**
- (A) A (B) a
(C) H (D) h
- 210. Two normal (Aa) parents have chances of an albino child:**
- (A) 25% (B) 50%
(C) 75% (D) 100%
- 211. The physiological effect of an allele over its partner allele on the same gene locus is called:**
- (A) Dominance (B) Epistasis
(C) Pleiotropy (D) Bombay phenotype
- 212. Inheritance of 4'O clock plant exhibits:**
- (A) Complete dominance (B) Incomplete dominance
(C) Codominance (D) Over dominance
- 213. Each allele capable of some degrees of expression when in heterozygous condition:**
- (A) Over dominance (B) Codominance
(C) Complete dominance (D) Partial dominance
- 214. Alleles lacking dominant and recessive relationships are called:**
- (A) Multiple alleles (B) Pseudoalleles
(C) Codominant alleles (D) Dominant alleles
- 215. What is a risk of colour blind child in a family when father is colour blind but mother is normal?**
- (A) Zero % (B) 25%
(C) 50% (D) 100%
- 216. All alternate forms of a gene (more than two) are called:**
- (A) Multiple alleles (B) Pseudoalleles
(C) Codominant alleles (D) Dominant alleles
- 217. How many gene pairs contribute to the wheat grain colour?**
- (A) One (B) Two
(C) Three (D) Four

218. Which one of the following is not a multiple allele?
(A) I^A (B) I^B
(C) i (D) a
219. Both anti-A and anti-B antibodies are found in persons with blood group:
(A) A (B) B
(C) AB (D) O
220. Which blood group lacks both anti-A and anti-B antibodies?
(A) A (B) B
(C) AB (D) O
221. Which one of the following is called universal donor?
(A) A (B) B
(C) AB (D) O
222. Which one of the following is called universal recipient?
(A) A (B) B
(C) AB (D) O
223. Secretor gene 'Se' is present on chromosome:
(A) 11 (B) 19
(C) 21 (D) 25
224. Rh^- person has genotype:
(A) DD (B) Dd
(C) dd (D) CD
225. Erythroblastosis foetalis is hemolytic disease of the:
(A) New born (B) Adult
(C) Monkey (D) Cats
226. The breakdown product of RBC is:
(A) Haemoglobin (B) Bilirubin
(C) Insulin (D) None of (A), (B), (C)
227. A gene or locus which suppressed or masked the actual affect of a gene at another locus; the phenomenon called:
(A) Pleiotropy (B) Dominance
(C) Probability (D) Epistasis

- 228. Bombay phenotype is an example of:**
- (A) Pleiotropy (B) Dominance
(C) Probability (D) Epistasis
- 229. What is a risk of colour blind child in a family when is mother colour blind but father is normal?**
- (A) Zero % (B) 25%
(C) 50% (D) 100%
- 230. Wheat grain colour is controlled by:**
- (A) 2 gene pairs (B) 3 gene pairs
(C) 4 gene pairs (D) 6 gene pairs
- 231. Which one is responsible for white colour of grain?**
- (A) AaBbcc (B) AaBbCc
(C) AaBBcc (D) aabbcc
- 232. Human skin colour is a.**
- (A) Quantitative trait (B) Qualitative trait
(C) Pleiotropic trait (D) Epistatic trait
- 233. The phenomenon of staying together of all genes of chromosome is called:**
- (A) Crossing over (B) Recombination
(C) Linkage (D) Epistasis
- 234. In meiosis crossing over is the phenomena of exchange of segments between non-sister chromatids of homologous chromosomes during:**
- (A) Prophase I (B) Prophase II
(C) Anaphase I (D) Anaphase II
- 235. Lengthwise pairing of homologous chromosomes is called:**
- (A) Linkage (B) Crossing over
(C) Chiasma (D) Synapsis
- 236. Variations provide raw materials for the process of:**
- (A) Linkage (B) Crossing over
(C) Synapsis (D) Evolution

237. Which one of the followings is a factor affecting cross over frequency?
- (A) Distance between genes (B) Age of female
(C) Radiations (D) All of them
238. X and Y-chromosomes are called:
- (A) Autosomes (B) Sex chromosomes
(C) Pseudosomes (D) Monosomes
239. All other chromosomes except X and Y chromosomes are called:
- (A) Autosomes (B) Sex chromosomes
(C) Pseudosomes (D) Monosomes
240. The 23rd chromosome pair in human male is:
- (A) Isomorphic (B) Telomorphic
(C) Heteromorphic (D) Monosomes
241. 'SRY' gene is located on:
- (A) Chromosome 11 (B) Chromosome 19
(C) X-chromosome (D) Y-chromosome
242. Male grass hopper has how many chromosomes.
- (A) 21 (B) 22
(C) 23 (D) 24
243. In round worm, *Ascaris incurva*, the female has 42 chromosomes in the form of:
- (A) 8 pairs of X and 13 pairs of autosomes
(B) 13 pairs of X and 8 pairs of autosomes
(C) 6 pairs of X and 15 pairs of autosomes
(D) 15 pairs of X and 6 pairs of autosomes
244. The pattern of sex determination in man and *Drosophila* is:
- (A) XO—XX type (B) XY—XX type
(C) XX—XY type (D) Both (B) and (C)
245. Abnormality of blood clotting factor VIII causes haemophila:
- (A) A (B) B
(C) C (D) D

- 246. Abnormality of blood clotting factor IX results in haemophilia:**
- (A) A (B) B
(C) C (D) D
- 247. Which one of the following is an autosomal disorder?**
- (A) Haemophilia A (B) Haemophilia B
(C) Haemophilia C (D) Testicular feminization syndrome
- 248. Red blindness is called:**
- (A) Protanopia (B) Deuteranopia
(C) Tritanopia (D) Protanomalous
- 249. Green blindness is called:**
- (A) Protanopia (B) Deuteranomalous
(C) Tritanopia (D) Protanomalous
- 250. Which one is called true colour – blindness?**
- (A) Monochromacy (B) Dichromacy
(C) Protanomalous (D) Deuteranomalous
- 251. What kind of Hypophosphatemic ricket disease is?**
- (A) Dietary (B) Metabolic
(C) Hereditary (D) Accidental
- 252. Which one is called male sex switch?**
- (A) tfm (B) Se
(C) SRY (D) h
- 253. It is a sex influenced trait:**
- (A) Pattern baldness (B) Haemophilia
(C) Colour blindness (D) Albinism
- 254. It is actually heterogeneous group of disorders which are characterized by elevated blood sugar level:**
- (A) Haemophilia (B) Colour blindness
(C) Diabetes insipidus (D) Diabetes mellitus

255. When a single gene has multiple phenotypic effects, the phenomenon is called:
- (A) Codominance (B) Epistasis
(C) Pleiotropy (D) Sex-linkage
256. What happened when both alleles of a gene pair independently express in a heterozygote?
- (A) Dominance (B) Incomplete dominance
(C) Over dominance (D) Codominance
257. A heterozygote offspring quantitatively exceeds the phenotypic expression of both homozygote parents due to:
- (A) Dominance (B) Incomplete dominance
(C) Over dominance (D) Codominance
258. How many gene pairs contribute to the wheat grain colour?
- (A) One (B) Two
(C) Three (D) Four
259. Who for the first time found white eye mutant in *Drosophila*?
- (A) Morgan (B) Bridges
(C) Correns (D) De Vries
260. Which of the following traits is transmitted directly from an affected father to only his sons?
- (A) Autosomal (B) X-linked
(C) Y-linked (D) X and Y linked
261. Which phenomenon reduces the chances of genetic recombination and variations among offspring?
- (A) Linkage (B) Crossing over
(C) Independent assortment (D) Dominance
262. Which of the following traits is not sex-linked recessive?
- (A) Haemophilia (B) Colour blindness
(C) Hypophosphatemic ricket (D) tfm syndrome

263. Which of these traits zigzags from maternal grandfather through a carrier daughter to a grandson?
- (A) Autosomal (B) X-linked
(C) Y-linked (D) X and Y linked
264. When haemophiliac carrier woman marries a normal man, who among her offspring may be affected:
- (A) All her children (B) All daughters
(C) Half of her daughter (D) Half of her sons
265. What is the risk of a colour blind child in a family when mother is colour – blind but father is normal?
- (A) 100% (B) 75%
(C) 50% (D) 25%
266. What is the risk of a colour – blind child in a family when father is colour blind but mother is normal?
- (A) 0% (B) 25%
(C) 50% (D) 100%

Answers

Sr.	Ans.								
1.	(C)	2.	(C)	3.	(B)	4.	(B)	5.	(D)
6.	(A)	7.	(B)	8.	(B)	9.	(D)	10.	(D)
11.	(C)	12.	(B)	13.	(C)	14.	(C)	15.	(B)
16.	(C)	17.	(C)	18.	(C)	19.	(A)	20.	(D)
21.	(D)	22.	(A)	23.	(B)	24.	(D)	25.	(D)
26.	(A)	27.	(A)	28.	(D)	29.	(B)	30.	(C)
31.	(D)	32.	(C)	33.	(C)	34.	(C)	35.	(B)
36.	(A)	37.	(C)	38.	(A)	39.	(B)	40.	(D)
41.	(D)	42.	(D)	43.	(C)	44.	(A)	45.	(B)
46.	(B)	47.	(D)	48.	(D)	49.	(A)	50.	(C)
51.	(D)	52.	(D)	53.	(A)	54.	(C)	55.	(C)
56.	(C)	57.	(B)	58.	(C)	59.	(C)	60.	(B)
61.	(C)	62.	(A)	63.	(B)	64.	(D)	65.	(C)
66.	(B)	67.	(D)	68.	(B)	69.	(C)	70.	(C)
71.	(C)	72.	(D)	73.	(D)	74.	(B)	75.	(C)
76.	(C)	77.	(B)	78.	(A)	79.	(D)	80.	(C)
81.	(C)	82.	(C)	83.	(B)	84.	(B)	85.	(C)
86.	(D)	87.	(A)	88.	(C)	89.	(D)	90.	(D)
91.	(C)	92.	(C)	93.	(D)	94.	(B)	95.	(D)
96.	(B)	97.	(D)	98.	(C)	99.	(C)	100.	(B)
101.	(B)	102.	(C)	103.	(B)	104.	(D)	105.	(D)
106.	(C)	107.	(D)	108.	(B)	109.	(A)	110.	(C)
111.	(B)	112.	(B)	113.	(A)	114.	(C)	115.	(C)
116.	(B)	117.	(C)	118.	(C)	119.	(B)	120.	(B)
121.	(B)	122.	(C)	123.	(B)	124.	(B)	125.	(C)

Sr.	Ans.								
126.	(D)	127.	(B)	128.	(C)	129.	(C)	130.	(B)
131.	(C)	132.	(B)	133.	(D)	134.	(B)	135.	(C)
136.	(B)	137.	(C)	138.	(A)	139.	(D)	140.	(B)
141.	(A)	142.	(A)	143.	(B)	144.	(B)	145.	(C)
146.	(C)	147.	(A)	148.	(A)	149.	(D)	150.	(C)
151.	(A)	152.	(B)	153.	(B)	154.	(C)	155.	(D)
156.	(C)	157.	(D)	158.	(D)	159.	(B)	160.	(D)
161.	(B)	162.	(C)	163.	(C)	164.	(C)	165.	(B)
166.	(A)	167.	(B)	168.	(D)	169.	(C)	170.	(B)
171.	(B)	172.	(C)	173.	(A)	174.	(A)	175.	(A)
176.	(B)	177.	(B)	178.	(C)	179.	(D)	180.	(D)
181.	(C)	182.	(D)	183.	(B)	184.	(C)	185.	(D)
186.	(B)	187.	(C)	188.	(B)	189.	(B)	190.	(B)
191.	(C)	192.	(A)	193.	(B)	194.	(A)	195.	(B)
196.	(A)	197.	(D)	198.	(D)	199.	(A)	200.	(A)
201.	(B)	202.	(B)	203.	(B)	204.	(B)	205.	(A)
206.	(C)	207.	(D)	208.	(C)	209.	(B)	210.	(A)
211.	(A)	212.	(B)	213.	(B)	214.	(C)	215.	(A)
216.	(A)	217.	(C)	218.	(D)	219.	(D)	220.	(C)
221.	(D)	222.	(C)	223.	(B)	224.	(C)	225.	(A)
226.	(B)	227.	(D)	228.	(D)	229.	(C)	230.	(B)
231.	(D)	232.	(A)	233.	(C)	234.	(A)	235.	(D)
236.	(D)	237.	(D)	238.	(B)	239.	(A)	240.	(C)
241.	(D)	242.	(C)	243.	(A)	244.	(B)	245.	(A)
246.	(B)	247.	(C)	248.	(A)	249.	(B)	250.	(A)
251.	(C)	252.	(C)	253.	(A)	254.	(D)	255.	(C)
256.	(D)	257.	(C)	258.	(C)	259.	(B)	260.	(C)
261.	(A)	262.	(C)	263.	(B)	264.	(D)	265.	(C)
266.	(A)								

SCHOOLZ



23
CHAPTER

BIOTECHNOLOGY

- Mendel's work was rediscovered in:**
(A) 1868 (B) 1882
(C) 1900 (D) 1950
- The work of biotechnology is:**
(A) Insulin (B) Drugs
(C) Pollution (D) All of the above
- Production of identical copying of gene is:**
(A) Replication (B) Cloning
(C) Reproduction (D) Multiplication
- Which of the following techniques produces large number of copies of genes?**
(A) PCR (B) Recombinant DNA technology
(C) RFLP (D) None of the above
- The technique used to produce copies of genes in laboratory is:**
(A) PCR (B) Recombinant DNA technology
(C) RFLOP (D) None of the above
- Which of the followings is used to transfer genes?**
(A) Molecular scissors (B) Molecular vector
(C) Expression system (D) None of the above
- The system used for the formation of specific product is:**
(A) Molecular scissors (B) Molecular vector
(C) Expression system (D) Gene of interest

- 8. Genes are cut by:**
- (A) Gene of interest (B) Expression system
(C) Molecular vector (D) Endonucleases
- 9. The genes which are synthesized from mRNA by reverse transcriptase are called:**
- (A) Endonucleases (B) Plasmids
(C) Coda (D) None of the above
- 10. Restriction enzymes are present in:**
- (A) Virus (B) Bacteria
(C) Plasmids (D) All of the above
- 11. The first restriction enzyme was isolated by:**
- (A) Kary Mullis (B) Hamiton
(C) Sanger (D) Maxam
- 12. Palindromic sequences are present in:**
- (A) Single phase (B) Repeated form
(C) Reverse order (D) Similar order
- 13. Number of restriction enzymes discovered so far are:**
- (A) 200 (B) 300
(C) 400 (D) 500
- 14. The number of frequently used restriction enzymes are:**
- (A) 10 (B) 20
(C) 30 (D) 40
- 15. The commonly used restriction enzyme is:**
- (A) E.Coli (B) EcoR11
(C) EcoR1 (D) EcoR111
- 16. Natural extra chromosomal circular DNA are:**
- (A) Endonucleases (B) Restriction enzyme
(C) Plasmids (D) Phage virus
- 17. Which of the followings is not a vector?**
- (A) pSc 101 (B) pBR-322
(C) EcoR1 (D) Phage virus

- 18. The plasmids having resistant gene against tetracycline and ampicillin are:**
- (A) pSc 101 (B) pBR-322
(C) EcoR1 (D) Phage virus
- 19. Which of the following phages is use as vector?**
- (A) Bacteriophage (B) Lambda phage
(C) T phage (D) All of the above
- 20. Pieces of DNA are jointed by:**
- (A) Chimaeric DNA (B) DA ligase
(C) Plasmids (D) Endonucleases
- 21. Match recombinant DNA with one of the followings:**
- (A) Chimaeric DNA (B) DNA ligase
(C) Plasmids (D) Endonucleases
- 22. Recombinant DNA are expressed in:**
- (A) Man (B) Virus
(C) Bacteria (D) None of the above
- 23. The chemical that makes the bacterial membrane permeable is:**
- (A) NaCl (B) CaCl₂
(C) Na₂CO₃ (D) CaCO₃
- 24. The single standard nucleotide sequence that hybridize into certain piece is:**
- (A) Clone (B) Probe
(C) REFLP (D) Endonuclease
- 25. Which of the followings form genomic library?**
- (A) Bacteria (B) Bacteriophage
(C) Segment of DNA (D) None of the above
- 26. PCR technique was developed by:**
- (A) Kary Mullis (B) Hamilton
(C) Sanger (D) Maxam
- 27. Which of the followings is irrelevant for PCR?**
- (A) Primer DNA (B) Recombinant DNA
(C) DNA polymerase (D) Thermocycler

- 28. Match target DNA with one of the followings:**
- (A) Primer DNA (B) Recombinant DNA
(C) DNA polymerase (D) Thermocycler
- 29. The enzyme extracted from *Thermus aquaticus* is:**
- (A) Primer DNA (B) Recombinant DNA
(C) DNA polymerase (D) Thermocycler
- 30. The steps involved in DNA finger printing:**
- (A) RFLP (B) Probes
(C) PCR (D) All of the above
- 31. The collection of different sized fragments is:**
- (A) Probes (B) RFLP
(C) PCR (D) Gel
- 32. DNA analyzer is used for:**
- (A) Forensic (B) Diagnosis
(C) Evolution (D) All of the above
- 33. The use of DNA analysis for convicting the criminal of rape is used in:**
- (A) Diagnosis (B) Forensic
(C) Evolution (D) All of the above
- 34. Match Sanger's method for generation of pieces of DNA with one of the followings:**
- (A) Deoxyribonucleotide (B) Ribonucleoside
(C) Dideoxyribonucleoside (D) DNA threads
- 35. Match Maxam – Gilbert method for generation of pieces of DNA with one of the followings:**
- (A) Deoxyribonucleotide (B) Dideoxyribonucleoside
(C) Dideoxyribonucleoside (D) DNA threads
- 36. Pieces of DNA are separated on:**
- (A) Agarol (B) Agarose gel
(C) Agar (D) All of the above

37. In gene sequencing the nucleotide strained with fluorescent dye are:
- (A) Initiation nucleotides (B) Middle nucleotides
(C) Terminating nucleotides (D) None of the above
38. In gene sequencing, the colour of the fluorescent bands are read by:
- (A) Computer (B) Gel
(C) Detector (D) Laser beam
39. The nucleotide sequence is stored by:
- (A) Computer (B) Gel
(C) Detector (D) Laser beam
40. The DNA sequence of which of the followings have been done?
- (A) Chloroplast (B) Mitochondria
(C) Yeast (D) All of the above
41. Which of the followings is model plant whose gene sequencing has been completed?
- (A) Yeast (B) Pea
(C) Arabidopsis (D) Plum
42. The gene sequence of which of the following chromosomes was completed in 1999:
- (A) 12 (B) 18
(C) 21 (D) 22
43. The smallest human chromosomes is:
- (A) 10 (B) 22
(C) 23 (D) Y
44. Which of the followings helped scientist to pinpoint disease causing genes?
- (A) PCR (B) Recombinant DNA
(C) RFLP (D) Probe
45. The number of base sequences in man is:
- (A) 2 billion (B) 3 billion
(C) 4 billion (D) 5 billion
46. The human genomic project will take how many volume of encyclopedia:
- (A) 100 (B) 200
(C) 300 (D) 400

- 47. Each piece of DNA should be:**
- (A) 500 nucleotide (B) 1000 nucleotide
(C) 3000 nucleotide (D) 4000 nucleotide
- 48. The copy of DNA pieces in human genomic project is made by:**
- (A) PCR (B) Recombinant DNA
(C) RFLP (D) Probe
- 49. The entire genome has been sequence by the company of:**
- (A) J. Craig Venter (B) Hamilton
(C) Sanger (D) Maxam
- 50. Organisms with foreign genes are called:**
- (A) Recombinant (B) Hybrids
(C) Transgenic (D) Modified
- 51. Transgenic bacteria are produced in large vats called:**
- (A) Thermocycler (B) Bioreactors
(C) Reactors (D) Electrophoresis
- 52. Which of the following products is prepared by recombinant DNA technology?**
- (A) Hepatitis B vaccine (B) Growth hormone
(C) Insulin (D) All of the above
- 53. The degradation of pollutants with the help of recombinant bacteria is called:**
- (A) Biofilters (B) Biodegradation
(C) Bioabsorption (D) None of the above
- 54. The bacteria used in industries for control of pollution are:**
- (A) Bioabsorption (B) Biodegradation
(C) Biofilters (D) None of the above
- 55. The genes which cause self destruction of bacteria are:**
- (A) Phage genes (B) Suicide genes
(C) Recombinant genes (D) Plasmid genes
- 56. Naturasweet is:**
- (A) Sugar (B) Starch
(C) Aspartame (D) Glucose

57. The bacteria are used in mining industry for:
- (A) Bioabsorption (B) Biodegradation
(C) Biofilters (D) Bioleaching
58. The plant cells whose cell wall is removed are:
- (A) Naked cells (B) Cullous
(C) Protoplast (D) All of the above
59. In which of the followings plant pest and herb resistant genes are not used?
- (A) Cotton (B) Corm
(C) Yeast (D) Potato
60. The acreage of transgenic plants in 1999 was:
- (A) 50 million (B) 70 million
(C) 90 million (D) 100 million
61. Green revolution was launched in:
- (A) 1960 (B) 1970
(C) 1990 (D) 2000
62. Scientists are working on which of followings for increasing yield:
- (A) Stomata (B) RuBP carboxylase
(C) C4 cycle (D) All of the above
63. Biodegradable plastic is obtained from:
- (A) Yeast (B) Mouse eared cress
(C) Bacteria (D) Bioreactos
64. The antibody which can deliver radio isotopes to tumor cells is obtained from:
- (A) Yeast (B) Weed
(C) Corn (D) Wheat
65. The antibody which is used for the treatment of genital herps is obtained from:
- (A) Yeast (B) Soya bean
(C) Corn (D) Wheat

- 66. Gene pharming is used for obtaining:**
- (A) Milk (B) Meat
(C) Antibodies (D) Drugs
- 67. In gene pharming egg is fertilized:**
- (A) In vitro (B) In vivo
(C) In bioreactor (D) None of the above
- 68. Antithrombin is produced in:**
- (A) Sheep (B) Goat
(C) Mice (D) Bovine
- 69. The organisms which are used to produce human growth hormone in their urine are:**
- (A) Sheep (B) Goat
(C) Mice (D) Bovine
- 70. The production of genetically identical copies of the organisms by asexual reproduction is called:**
- (A) Recombinant DNA (B) Cloning
(C) Gene pharming (D) None of the above
- 71. The first animal cloned was:**
- (A) Sheep (B) Dolly
(C) Mice (D) Bovine
- 72. In the cloning of mice the second nucleus is obtained from:**
- (A) Uterus cells (B) Cumulus cells
(C) Skin cells (D) None of the above
- 73. The insertion of genetic material into human cells for the treatment of a disorder is called**
- (A) Gene cloning (B) Gene pharming
(C) Gene therapy (D) Gene sequencing
- 74. The disease not treated by Ex vivo gene therapy is:**
- (A) SCID (B) Diabetes
(C) Hypercholesterolemia (D) All of the above

75. The enzyme ADA is involved in maturation of:
- (A) RBC (B) Platelets
(C) Lymphocyte (D) Macrophages
76. The organism used as vector during treatment of SCID by gene therapy is:
- (A) Plasmids (B) Phage
(C) Retroviruses (D) None of the above
77. The genes for the treatment of SCID are introduced in:
- (A) Bone marrow (B) Heart
(C) Liver (D) None of the above
78. The hypercholesterolemia causes at young age:
- (A) Diabetes (B) Blood pressure
(C) Heart attack (D) All of the above
79. The genes for the treatment of hypercholesterolemia are introduced in:
- (A) Bone marrow (B) Heart
(C) Liver (D) None of the above
80. In which of these in vivo gene therapy is used?
- (A) Cystic fibrosis (B) Cancer
(C) Coronary angioplasty (D) All of the above
81. In cystic fibrosis, the gene codes for trans membrane carrier of which ion is missing:
- (A) Na (B) K
(C) Cl (D) Ca
82. The microscopic vesicles formed during gene therapy of cystic fibrosis are called:
- (A) Ribosomes (B) Liposomes
(C) Endosomes (D) Microsomes
83. The solution of Liposomes is sprayed on:
- (A) Skin (B) Joints
(C) Nostrils (D) Mouth

- 84. The gene therapy in cancer makes the patient tolerant for:**
(A) Radiotherapy (B) Chemotherapy
(C) Endoscopies (D) Gene therapy
- 85. These are used in angioplasty:**
(A) Balloon (B) Plasmids
(C) Gene therapy (D) All of the above
- 86. Which of the following diseases is not treated by in vivo gene therapy?**
(A) Haemophilia (B) Diabetes
(C) Parkinson's diseases (D) All of the above
- 87. The plants cells can develop complete plants. So they are called:**
(A) Callous (B) Totipotent
(C) Clone (D) None of the above
- 88. Complete carrot plant was developed from tiny part of phloem by:**
(A) J. Craig Venter (B) Hamilton
(C) Sanger (D) F.C. Steward
- 89. F. C Steward provided the phloem cells:**
(A) Sugars (B) Vitamins
(C) Coconut milk (D) All of the above
- 90. An undifferentiated group of cells is called:**
(A) Callous (B) Totipotent
(C) Clone (D) None of the above
- 91. Callous can form:**
(A) Root (B) Stem
(C) Shoot (D) Complete plant
- 92. In micropropagation, the structure used is:**
(A) Stem (B) Meristem
(C) Callous (D) Totipotent
- 93. In micropropagation of meristem, the hormone used is:**
(A) Gibberellins (B) Auxins
(C) Absciscic acid (D) All of the above

- 94. The plants produced by micropropagation of meristem are called:**
- (A) Callous (B) Seedling
(C) Clonal (D) Somaclonal
- 95. Which of the following is virus free?**
- (A) Callous (B) Seedling
(C) Clonal plant (D) Adult plant
- 96. The naked cells of plant are called:**
- (A) Protoplasm (B) Cytoplasm
(C) Protoplast (D) Callous
- 97. The protoplast regenerates and produces:**
- (A) Callous (B) Seedling
(C) Clonal (D) Clump
- 98. The clumps produce:**
- (A) Callous (B) Somatic embryo
(C) Clonal plant (D) Adult plant
- 99. Somatic embryo are encapsulated in gel and are called:**
- (A) Seeds (B) Artificial seed
(C) Clonal plant (D) Clump
- 100. Millions of artificial seed are produced in large tanks called:**
- (A) Thermocycler (B) Biopole
(C) Bioreactors (D) None of the above
- 101. The artificial seeds are produced of which of the following plants?**
- (A) Corn (B) Tomato
(C) Mango (D) Roses
- 102. The plants produced by micropropagation from single cell are called:**
- (A) Callous (B) Seedling
(C) Clonal (D) Somaclonal
- 103. Anther is cultured in a medium containing:**
- (A) Sugars (B) Vitamins
(C) Coconut milk (D) All of the above

- 104. The haploid tube cells within the pollen grains divide to produce:**
- (A) Callous (B) Somatic embryo
(C) Clonal plant (D) Proembryo
- 105. Anther culturing is used to express:**
- (A) Dominant gene (B) Heterozygous
(C) Homozygous recessive (D) None of the above
- 106. Which of the followings is produced from suspension culture?**
- (A) Starch (B) Proteins
(C) Quinine (D) Auxins
- 107. The crossing of different varieties of plants is called:**
- (A) Vegetative propagation (B) Hybridization
(C) Suspension culturing (D) None of the above
- 108. The bacterium used in the genetic engineering of cereals is:**
- (A) E.Coli (B) Digitalis lanata
(C) Agrobacterium (D) None of the above
- 109. Particle gun was developed by:**
- (A) J. Craig Venter (B) Sanford and Theodore
(C) Sanger (D) F.C. Steward
- 110. The particle gun is used to bombard the:**
- (A) Callous (B) Seedling
(C) Clonal (D) Somaclonal
- 111. Which of the followings is cold resistant plant?**
- (A) Wheat (B) Canola
(C) Cotton (D) Rice
- 112. Which of the followings is drought tolerant plant?**
- (A) Wheat (B) Canola
(C) Cotton (D) Sugarcane
- 113. Herbicide resistant plant is:**
- (A) Wheat (B) Canola
(C) Cotton (D) Sugarcane

- 114. Monosaturated oleic acid is produced from:**
- (A) Mustard (B) Soya bean
(C) Cotton (D) Sun flower
- 115. Which of the following compounds is used for hardening the paints and plastics?**
- (A) Oleic acid (B) Palmitic acid
(C) Vernolic acid (D) None of the above
- 116. The genes of vernolic acid were derived from:**
- (A) Mustard (B) Soya bean
(C) Castor bean (D) Sun flower
- 117. Amino acid contents are improved in:**
- (A) Mustard (B) Soya bean
(C) Cotton (D) Sun flower
- 118. Protein and starch contents have been improved in:**
- (A) Mustard (B) Mango
(C) Corn (D) Sun flower
- 119. Oil contents are improved in:**
- (A) Mustard (B) Soya bean
(C) Cotton (D) Sun flower
- 120. Which of the followings is a salt tolerant plant?**
- (A) Mustard (B) Soya bean
(C) Arabidopsis (D) Sun flower
- 121. The crop production have reduced due to salination by:**
- (A) 40% (B) 50%
(C) 60% (D) 70%
- 122. The enzyme galactosidase was harvested from:**
- (A) Tobacco (B) Soya bean
(C) Cotton (D) Sun flower
- 123. The advantages of biotechnology are:**
- (A) Transfer of gene from one organism to other
(B) It produces insulin
(C) It is used to alter the genotype
(D) All of the above

- 124. Which of the followings is not step of recombinant DNA technology?**
- (A) The cloning of gene of interest
 - (B) The genes of interest are cut down
 - (C) The genes of interest are introduced into expression system
 - (D) None of the above
- 125. Genomic library is composed of:**
- (A) Part of DNA pieces
 - (B) Clone of bacteria with pieces of DNA
 - (C) Segments of chromosomes
 - (D) None of the above
- 126. Probe is:**
- (A) An enzyme to cut the DNA
 - (B) Double stranded DNA piece
 - (C) Single stranded DNA piece
 - (D) Single stranded RNA piece
- 127. RFLP is a:**
- (A) Fragment of DNA
 - (B) Fragment of proteins
 - (C) Fragment of RNA
 - (D) None of the above
- 128. Which of the followings is not the use of DNA analysis?**
- (A) Diagnosis of diseases
 - (B) Uses to identifying rape victim
 - (C) Disputed parenthood
 - (D) All of the above
- 129. Match DNA finger prints with one of the followings:**
- (A) Used in recombinant DNA technology
 - (B) Used in genomic library
 - (C) Used in identification of criminals
 - (D) Used in gene therapy
- 130. Which of the followings is not function of transgenic bacteria?**
- (A) Synthesis of pharmaceutical products
 - (B) Promoting health in plants
 - (C) Role in genomic library
 - (D) Used as biofilter

- 131. The use of transgenic plants is:**
- (A) Pest and herb resistance (B) Increasing production of crops
(C) Synthesis of human products (D) All of the above
- 132. The transgenic animals are not used for:**
- (A) Higher growth rate of animals (B) Gene pharming
(C) Gene cloning (D) None of the above
- 133. Ex vivo gene therapy:**
- (A) Genes are inserted inside the body
(B) Genes are inserted outside the body
(C) Genes are transferred through vectors
(D) None of the above
- 134. In vivo gene therapy:**
- (A) Genes are inserted inside the body
(B) Genes are inserted outside the body
(C) Genes are transferred through vectors
(D) None of the above
- 135. The artificial seeds are:**
- (A) Seeds covered with plastic (B) Embryo covered with plastic
(C) Embryo covered with gel (D) None of the above
- 136. Bioreactors are:**
- (A) Organisms which react with environment
(B) Place where bacteria are produced
(C) Control of pollution by bacteria
(D) Absorption of chemicals
- 137. The gene therapy is used to repair:**
- (A) Effective gene (B) Faulty gene
(C) Supressive gene (D) Expressive gene
- 138. The use of polymerase chain reaction creates a:**
- (A) Less number of copies (B) Lesser number of copies
(C) More number of copiers (D) Much more number of copies

- 139. The gene of interest could be placed on:**
- (A) Vector (B) Scissors
(C) Regulator (D) Indicator
- 140. Genes can be isolated from the chromosomes by cutting the chromosomes by enzymes called:**
- (A) Restriction endonucleases (B) Reverse transcriptase
(C) Restriction nucleases (D) Restriction exonucleases
- 141. PCR is done by a machine:**
- (A) Replicator (B) Thermocycler
(C) Chemocycler (D) Cyclor
- 142. DNA finger prints can be prepared from:**
- (A) Plasma (B) Blood
(C) Serum (D) Lymph
- 143. Organic chemicals are synthesized by having catalysts acting on:**
- (A) Precursor molecules (B) Pollutants
(C) Totipotents (D) Activators
- 144. Soyabeans have been made resistant to:**
- (A) Herbicide (B) Gremicide
(C) Insecticide (D) Fungicide
- 145. DNA containing the genes of interest is injected into donor:**
- (A) Eggs (B) Body cells
(C) Eggs and sperms (D) Sperms
- 146. Urine is a preferable vehicle for a product of:**
- (A) Ecology (B) Physiology
(C) Morphology (D) Biotechnology
- 147. Cystic fibrosis can be cured by:**
- (A) Episomes vehicles (B) Liposomes vehicles
(C) Eposomes vehicles (D) Disomic vehicles

- 148. To cure Parkinson's disease dopamine – producing cells could be grafted directly into the:**
- (A) Stomach (B) Blood
(C) Brain (D) Kidneys
- 149. Which one method is used to produce new plants with desired traits?**
- (A) Hybridization (B) Mutations
(C) Variations (D) Somaclonal variations
- 150. An undifferentiated group of cells is called:**
- (A) Callus (B) Calyx
(C) Thallus (D) Sepals
- 151. Somatic embryos are encapsulated in a protective:**
- (A) Gel (B) Hydrated gel
(C) Electrophoresis (D) Sol
- 152. Digitoxin is produced from:**
- (A) Digitalis (B) Cinchona
(C) Cactus (D) Dilbergia
- 153. A technique for the culturing of plant tissues is called:**
- (A) Cell culture (B) Meristem culture
(C) Anther culture (D) Cell suspension culture
- 154. Genetic engineering is expected to increase:**
- (A) Sensitivity (B) Sterility
(C) Productivity (D) Insensitivity
- 155. The enzyme that can be used to treat a human lysosome shortage disease is:**
- (A) β -galactosidase (B) α -galactosidase
(C) Galactosidase (D) α and β -galactosidase
- 156. The growth of a tissue in an artificial liquid culture medium is called:**
- (A) Tissue culture (B) Cloning
(C) Angioplasty (D) Gene therapy
- 157. Gene of interest with vector:**
- (A) An expression system (B) Cuts double stranded DNA
(C) Four or six (D) Bind by supplementary base pair

- 158. Polindromic sequences:**
(A) Bind by supplementary base pair (B) Cuts double stranded DNA
(C) Four or six nucleotides (D) An expression system
- 159. EcoR1:**
(A) Four or six (B) Bind by supplementary base pair
(C) Cuts double stranded DNA (D) An expression system
- 160. Sticky ends:**
(A) Bind by supplementary base pair (B) An expression system
(C) Four or six (D) Bind by complementary base pairing
- 161. Cuts the plasmid:**
(A) Chimaeric DNA (B) Takes up recombined plasmid
(C) DNA ligase (D) Cloned genes
- 162. Host cell:**
(A) DNA ligase (B) Cloned genes
(C) Takes up recombined plasmid (D) Chimaeric DNA
- 163. pBR 322:**
(A) Antibiotic resistance genes for tetracycline and ampicillin
(B) Chimaeric DNA
(C) Takes up recombined plasmid
(D) DNA ligase
- 164. Recombinant DNA:**
(A) Chimaeric DNA
(B) Takes up recombined plasmid
(C) DNA ligase
(D) Antibiotic resistance genes for tetracycline and ampicillin
- 165. Lambda phage:**
(A) Replacing (B) Slicing of DNA
(C) Replication (D) Attaches to the host
- 166. The clumps produce:**
(A) Callous (B) Somatic embryo
(C) Clonal plant (D) Adult plant

- 167. Genomic library:**
- (A) Replication (B) Replacing
(C) To search the genetic library (D) Slicing of DNA
- 168. DNA polymerase:**
- (A) Replacing (B) Slicing of DNA
(C) Replication (D) To search the genetic library
- 169. Restriction fragment length polymorphism:**
- (A) Sanger's method (B) To diagnose viral infection
(C) Maxam – Gilbert method (D) RFLPs
- 170. DNA finger prints:**
- (A) As evidence for paternity (B) RFLPs
(C) Maxam – Gilbert method (D) To diagnose viral infection
- 171. PCR analysis:**
- (A) RFLPs (B) To diagnose viral infection
(C) Maxam – Gilbert method (D) Sanger's method
- 172. Dideoxyribo nucleoside triphosphate:**
- (A) To diagnose viral infection (B) Sanger's method
(C) As evidence for paternity (D) Maxam – Gilbert method
- 173. Human chromosome number 22:**
- (A) Bacteria that reproduce in large vats
(B) Viruses'
(C) Smallest chromosome
(D) A restriction enzyme cuts DNA
- 174. Huntington disease:**
- (A) Smallest chromosome (B) Bacteria that reproduce in large vats
(C) A restriction enzyme cuts DNA (D) Viruses'
- 175. Automatic DNA sequence:**
- (A) Viruses' (B) Smallest chromosome
(C) A restriction enzyme cuts DNA (D) Determines the order of base pairs

176. Bioreactors:

- (A) A restriction enzyme cuts DNA
- (B) Bacteria that reproduce in large vats
- (C) Determines the order of base pairs
- (D) Smallest chromosome

177. Transgenic bacteria:

- (A) Promote health of plants
- (B) Used to make holes in the plasma membrane
- (C) An organic chemical used to make aspartame
- (D) Used to stimulate the sperms to divide

178. Phenylalanine:

- (A) Promote health of plants
- (B) Used to stimulate the sperms to divide
- (C) An organic chemical used to make aspartame
- (D) Used to make holes in the plasma membrane

179. Electric current:

- (A) Promote health of plants
- (B) Used to make holes in the plasma membrane
- (C) An organic chemical used to make aspartame
- (D) Used to stimulate the sperms to divide

180. Chemical bath:

- (A) Used to stimulate the eggs to dive
- (B) Promotes health of plants
- (C) An organic chemical used to make aspartame
- (D) Used to make holes in the plasma membrane

181. Hyper cholesterolemia:

- (A) Kills the cancer cells
- (B) High level of blood cholesterol
- (C) is also done in cancer patients
- (D) a condition in which liver cells lack receptor for removing cholesterol

182. Fatal heart attacks in a young:

- (A) Kills the cancer cells
- (B) a condition in which liver cells lack receptor for removing cholesterol
- (C) High level of blood cholesterol
- (D) is also done in cancer patients

183. Gene therapy:

- (A) Kills the cancer cells
- (B) High level of blood cholesterol
- (C) a condition in which liver cells lack receptor for removing cholesterol
- (D) is also done in cancer patients

184. Chemotherapy:

- (A) Kills the cancer cells
- (B) High level of blood cholesterol
- (C) is also done in cancer patients
- (D) a condition in which liver cells lack receptor for removing cholesterol

185. In-vivo therapy:

- (A) Develop into mature plants
- (B) Cytokinin
- (C) Mature flower
- (D) To cure hemophilia

186. Coconut milk:

- (A) Mature flower
- (B) Cytokinin
- (C) Develop into mature plants
- (D) To cure hemophilia

187. Plant viruses:

- (A) Mature flower
- (B) Make the plants less productive
- (C) Develop into mature plants
- (D) Cytokinin

188. Somatic embryos:

- (A) Cytokinin
- (B) Make the plants less productive
- (C) Develop into mature plants
- (D) Mature flower

189. Haploid tube cells:

- (A) Quinine
- (B) Direct way to produce plants
- (C) Produce proembryos
- (D) Releasing haploid embryos

190. Rupturing of pollen grains:

- (A) Releasing haploid embryos (B) Produce proembryos
(C) Asprine (D) Quinine

191. Anther culture:

- (A) Direct way to produce plants (B) Releasing haploid embryos
(C) Produce proembryos (D) Quinine

192. Cinehona:

- (A) Quinine (B) Direct way to produce plants
(C) Produce proembryos (D) Releasing haploid embryos

193. Cell suspension culture:

- (A) Production of cosmetics (B) Crossing of different varieties of plants
(C) Corn and wheat protoplasts (D) Galactosidase

194. Hybridization:

- (A) Corn and wheat protoplasts (B) Galactosidase
(C) Inserted in tobacco protoplast (D) Crossing of different varieties of plants

195. Luciferase:

- (A) Inserted in tobacco protoplast
(B) Galactosidase
(C) Crossing of different varieties of plants
(D) Production of cosmetics

196. Infertile plants:

- (A) Corn and wheat protoplasts (B) Crossing of different varieties of plants
(C) Galactosidase (D) Production of cosmetics

Answers

Sr.	Ans.								
1.	(C)	2.	(D)	3.	(B)	4.	(D)	5.	(A)
6.	(B)	7.	(C)	8.	(D)	9.	(C)	10.	(B)
11.	(B)	12.	(C)	13.	(C)	14.	(B)	15.	(C)
16.	(C)	17.	(C)	18.	(B)	19.	(B)	20.	(B)
21.	(A)	22.	(C)	23.	(B)	24.	(B)	25.	(D)
26.	(A)	27.	(B)	28.	(A)	29.	(A)	30.	(D)
31.	(B)	32.	(D)	33.	(B)	34.	(C)	35.	(D)
36.	(B)	37.	(C)	38.	(C)	39.	(A)	40.	(D)
41.	(C)	42.	(D)	43.	(B)	44.	(C)	45.	(B)
46.	(B)	47.	(B)	48.	(A)	49.	(A)	50.	(C)
51.	(B)	52.	(D)	53.	(B)	54.	(C)	55.	(B)
56.	(C)	57.	(D)	58.	(C)	59.	(C)	60.	(B)
61.	(A)	62.	(D)	63.	(B)	64.	(C)	65.	(B)
66.	(C)	67.	(A)	68.	(B)	69.	(B)	70.	(B)
71.	(B)	72.	(C)	73.	(B)	74.	(C)	75.	(C)
76.	(A)	77.	(C)	78.	(C)	79.	(D)	80.	(C)
81.	(B)	82.	(C)	83.	(B)	84.	(D)	85.	(D)
86.	(B)	87.	(D)	88.	(D)	89.	(A)	90.	(D)
91.	(B)	92.	(B)	93.	(C)	94.	(C)	95.	(C)
96.	(D)	97.	(B)	98.	(B)	99.	(C)	100.	(B)
101.	(D)	102.	(B)	103.	(D)	104.	(C)	105.	(C)
106.	(B)	107.	(C)	108.	(B)	109.	(A)	110.	(D)
111.	(D)	112.	(A)	113.	(B)	114.	(C)	115.	(C)
116.	(B)	117.	(C)	118.	(B)	119.	(C)	120.	(B)

Sr.	Ans.								
121.	(A)	122.	(D)	123.	(D)	124.	(B)	125.	(C)
126.	(A)	127.	(D)	128.	(C)	129.	(C)	130.	(D)
131.	(C)	132.	(B)	133.	(A)	134.	(C)	135.	(B)
136.	(B)	137.	(B)	138.	(A)	139.	(A)	140.	(B)
141.	(B)	142.	(A)	143.	(A)	144.	(A)	145.	(D)
146.	(B)	147.	(C)	148.	(D)	149.	(A)	150.	(B)
151.	(A)	152.	(D)	153.	(C)	154.	(B)	155.	(A)
156.	(A)	157.	(A)	158.	(C)	159.	(D)	160.	(C)
161.	(C)	162.	(A)	163.	(A)	164.	(D)	165.	(C)
166.	(B)	167.	(C)	168.	(D)	169.	(A)	170.	(B)
171.	(B)	172.	(C)	173.	(C)	174.	(D)	175.	(B)
176.	(A)	177.	(C)	178.	(B)	179.	(A)	180.	(D)
181.	(B)	182.	(D)	183.	(A)	184.	(D)	185.	(B)
186.	(B)	187.	(C)	188.	(C)	189.	(A)	190.	(A)
191.	(A)	192.	(A)	193.	(D)	194.	(A)	195.	(A)
196.	(A)								

SCHOOLZ



24
CHAPTER

EVOLUTION

- The mechanism of evolution called “natural selection” was proposed by:**
(A) Lamarck (B) Darwin
(C) Cuvier (D) Mendel
- The endosymbiont hypothesis was proposed by:**
(A) Lamarck (B) Wallace
(C) Margulis (D) Lyell
- The evolutionary hypothesis that “the prokaryotic cell membrane invaginated to enclose its copy of genetic material” is said to be:**
(A) Ecotsymbiont hypothesis (B) Membrane invagination hypothesis
(C) Unit membrane hypothesis (D) Endosymbiont hypothesis
- The integration of the principles of genetics and evolution is called as:**
(A) Lamarckism (B) Theory of special creation
(C) Neo Darwinism (D) Mendelism
- How many finches did Darwin collect on galapagos island?**
(A) 30 types (B) 20 types
(C) 13 types (D) 25 types
- The study of distribution of living things on earth is called:**
(A) Biogeography (B) Biology
(C) Comparative anatomy (D) Molecular biology
- The breeding of domesticated plants and animals refers to:**
(A) Artificial selection (B) Selection by chance
(C) Wild selection (D) Natural selection

8. **The shuffling of alleles due to meiosis and random fertilization having no effect on over all genetic structure of a population signifies:**
- (A) Went's theorem (B) Fischer's theorem
(C) Hardy-Weinberg theorem (D) Binomial theorem
9. **In Hardy Weinberg's equation i.e., $p^2 + 2pq + q^2 = 1$ p-stands for:**
- (A) None (B) Gene frequency of one allele
(C) Frequency of whole gene pool (D) Both (A) and (B)
10. **The tropical rain forests have been reduced to what percentage of their original extent?**
- (A) 44% (B) 10%
(C) 84% (D) 20%
11. **The smallest biological unit that can evolve over time is:**
- (A) A community (B) A population
(C) A species (D) An ecosystem
12. **The first eukaryotic cell appeared about how many years ago?**
- (A) 1.5 billion (B) 2.4 billion
(C) 3.9 billion (D) 3.5 billion
13. **The "ontogeny recapitulates phylogeny" supports the evidence from:**
- (A) Comparative embryology (B) Fossil record
(C) Comparative anatomy (D) Molecular biology
14. **If all the members of a population are homozygous for the same allele then that allele is:**
- (A) Variable (B) Abnormal
(C) Fixed (D) Normal
15. **The species which are near to become endangered are called as:**
- (A) Threatened species (B) Endangered species
(C) Wild species (D) None
16. **The study of total aggregate of genes in a population at any one time is known as:**
- (A) Population genetics (B) Molecular biology
(C) Embryology (D) Cytogenetics

17. **As per natural selection the survival in struggle for existence is not random. It depends on surviving individuals:**
- (A) Interaction (B) Ancestry
(C) Hereditary constitution (D) Phenotype
18. **Which one of the following is not declared as an extinct species in Pakistan?**
- (A) Asian lion (B) Green parrot
(C) Indian rhino (D) Cheetah
19. **The rudimentary structures that had important functions in ancestors in the remote past are said to be:**
- (A) Functional organs (B) Vestigial organs
(C) Visceral organs (D) Assimilatory organs
20. **The level of classification between species and family is called as:**
- (A) Genus (B) Phylum
(C) Division (D) Group
21. **Theory of special creation:**
- (A) 60°C (B) Lynn Margulis
(C) Darwin (D) C. Linnaeus
22. **Archaeobacteria:**
- (A) 120°C (B) Lynn Margulis
(C) C. Linnaeus (D) Darwin
23. **Edosymbiont hypothesis:**
- (A) C. Linnaeus (B) Lynn Margulis
(C) 120°C (D) Darwin
24. **H.M.S. Beagle:**
- (A) C. Linnaeus (B) 120°C
(C) Lynn Margulis (D) Darwin
25. **Inheritance of acquired characteristics:**
- (A) Sedimentary rocks (B) Lamarck
(C) Homologous organs (D) Analogous organs

- 26. Fossils:**
- (A) Sedimentary rocks (B) Lamarck
(C) Homologous organs (D) Hydrothermal vents
- 27. Fore limbs of man and wings of bat:**
- (A) Hydrothermal vents (B) Sedimentary rocks
(C) Analogous organ (D) Homologous organs
- 28. Hot springs:**
- (A) Homologous organs (B) Sedimentary rocks
(C) Analogous organs (D) Hydrothermal vents
- 29. Eukaryotic cells:**
- (A) Mutation
(B) Lamarckism
(C) Membrane invagination hypothesis
(D) Population
- 30. Neo Darwinism:**
- (A) Modern synthesis (B) Population
(C) Mutation (D) Lamarckism
- 31. A group of interbreeding individuals:**
- (A) Lamarckism (B) Membrane invagination hypothesis
(C) Modern synthesis (D) Population
- 32. Change in genetic make up:**
- (A) Lamarckism (B) Modern synthesis
(C) Population (D) Mutation
- 33. Wings of bats:**
- (A) Fixed (B) Hardy Weinberg theorem
(C) Convergent evolution (D) Variable
- 34. $(p + q)^2$:**
- (A) Variable (B) Hardy Weinberg theorem
(C) Fixed (D) Extinct species

- 35. Asian lion:**
(A) Extinct species (B) Hardy Weinberg theorem
(C) Convergent evolution (D) Fixed
- 36. Homozygous:**
(A) Extinct species (B) Fixed
(C) Hardy Weinberg theorem (D) Convergent evolution
- 37. Essay on the principle of population:**
(A) Analogous organs (B) Evidence of evolution
(C) Finches (D) Cuvier
- 38. Galapagos:**
(A) Evidence of evolution (B) Analogous organs
(C) Cuvier (D) Finches
- 39. Functionally alike but structurally different:**
(A) Evidence of evolution (B) Fishes
(C) Analogous organs (D) Cuvier
- 40. Comparative anatomy:**
(A) Analogous organs (B) Evidence of evolution
(C) Fishes (D) Cuvier
- 41. The origin of species:**
(A) Genetic drift (B) Darwin
(C) Glycogen (D) Vestigial organ
- 42. Ear muscles in man:**
(A) Genetic drift (B) Vestigial organ
(C) Darwin (D) Respiratory protein
- 43. Change in the frequency of alleles occurring by chance:**
(A) Darwin (B) Genetic drift
(C) Vestigial organ (D) Glycogen
- 44. Cytochrome:**
(A) Vestigial organ (B) Genetic drift
(C) Respiratory protein (D) Darwin

- 45. The theory of natural selection was supported by:**
(A) Darwin (B) Aristotle
(C) Linnaeus (D) Lamarck
- 46. The theory of natural selection was formulated by:**
(A) Darwin (B) Linnaeus
(C) Lamarck (D) Aristotle
- 47. The essay "Principle of population" was published by:**
(A) Cuvier (B) Lyell
(C) Malthus (D) Mendel
- 48. Match theory of natural selection with one of the followings:**
(A) Natural selection (B) Evolution
(C) Divine creation (D) Principle of population
- 49. Principle of geology was published by:**
(A) Darwin (B) Lyell
(C) Linnaeus (D) Lamarck
- 50. Papers on inheritance was published by:**
(A) Cuvier (B) Lyell
(C) Malthus (D) Mendel
- 51. Match catastrophism with one of the following:**
(A) Lyell (B) Cuvier
(C) Malthus (D) Mendel
- 52. The prokaryotes arise how many years ago?**
(A) 1.5 billion (B) 3.5 million
(C) 3.5 billion (D) 4.5 billion
- 53. The bacteria living in hydrothermal vent are:**
(A) Cyanobacteria (B) Eubacteria
(C) Archeobacteria (D) All of the above
- 54. Archeobacteria can tolerate temperature upto:**
(A) 100°C (B) 105°C
(C) 110°C (D) 120°C

55. The compound used first by photosynthetic organism as a hydrogen sources was:
- (A) Water (B) Methane
(C) Hydrogen sulphide (D) Hydrogen per oxide
56. Ozone is formed from:
- (A) Water (B) Hydrogen
(C) CO₂ (D) Oxygen
57. Enough protective ozone was built about how many years ago?
- (A) 320 million (B) 420 million
(C) 420 billion (D) 320 billion
58. Life can form abiotically only in:
- (A) Oxidizing environment (B) Reducing environment
(C) Both (A) and (B) (D) None of the above
59. The idea of endosymbiont was proposed by:
- (A) Cuvier (B) Lyell
(C) Malthus (D) Margulis
60. In endosymbiont idea, flagella are formed from:
- (A) Aerobic bacteria (B) Cyanobacteria
(C) Spirochete (D) None of the above
61. The chloroplast of the eukaryotes was formed from:
- (A) Aerobic bacteria (B) Spirochete
(C) Cyanobacteria (D) None of the above
62. The idea of inheritance of acquired character was proposed by:
- (A) Darwin (B) Lyell
(C) Linnaeus (D) Lamarck
63. The island near South American coastline is:
- (A) Iceland (B) Galapagos
(C) Cape Verde (D) None of the above
64. Darwin came back to Great Britain in:
- (A) 1932 (B) 1934
(C) 1936 (D) 1939

- 65. Another theory of natural selection other than Darwin was developed by:**
- (A) Wallace (B) Lyell
(C) Linnaeus (D) Lamarck
- 66. Descent with modification means:**
- (A) Similar characters (B) Same ancestor
(C) Different ancestors (D) None of the above
- 67. Population genetics emphasized on:**
- (A) Acquired characters (B) Qualitative characters
(C) Quantitative characters (D) None of the above
- 68. Modern synthesis includes:**
- (A) Taxonomy (B) Population genetics
(C) Palaeontology (D) All of the above
- 69. Match divergent evolution with one of the following:**
- (A) Analogy (B) Anatomy
(C) Homology (D) Palaeontology
- 70. Vermiform appendix in man is:**
- (A) Analogous structure (B) Homologous structure
(C) Vestigial structure (D) None of the above
- 71. Which of the followings is not a vestigial organ?**
- (A) Appendix (B) Skeleton of whale
(C) Pelvic in man (D) Leg bone in snakes
- 72. Which is mismatched for homologous structures?**
- (A) Foreleg of horse (B) Wing of birds
(C) Wing of insects (D) Flipper of whale
- 73. Which is mismatched for analogous structures?**
- (A) Forelimb of bat (B) Wing of birds
(C) Wing of insects (D) Flipper of whale
- 74. In terrestrial vertebrates, the gills are modified to form:**
- (A) Ear muscles (B) Eustachian tube
(C) Lungs (D) Larynx

- 75. The proteins found in all aerobic species are:**
- (A) Haemoglobin (B) Cytochrome
(C) Albumin (D) Keratin
- 76. The total aggregate gene of population is:**
- (A) Poly gene (B) Gene pool
(C) Gene interaction (D) None of the above
- 77. Number of homozygous dominant flowers in a population is 320 and number of heterozygous flowers is 160. Number of dominant alleles in this population is:**
- (A) 320 (B) 600
(C) 800 (D) 100
- 78. The mammal which live only in America is:**
- (A) Kangaroo (B) Elephant
(C) Armadillos (D) Echidna
- 79. The oldest known fossils:**
- (A) Fish (B) Prokaryotes
(C) Protozoans (D) Algae
- 80. Fossil record shows that the earliest known vertebrate fossils of:**
- (A) Reptiles (B) Fishes
(C) Amphioxus (D) Amphibians
- 81. The second oldest vertebrate fossil:**
- (A) Reptiles (B) Fishes
(C) Amphioxus (D) Amphibians
- 82. The latest fossil found is:**
- (A) Reptiles (B) Birds
(C) Amphioxus (D) Amphibians
- 83. Which of the following is a fossil?**
- (A) Cast (B) Impression
(C) Resin (D) None of the above

- 84. Most fossils are found in:**
- (A) Hard rocks (B) Sedimentary rocks
(C) Soft rocks (D) Ignitions rocks
- 85. The structures which have common origin but different function:**
- (A) Analogous structures (B) Homologous structures
(C) Vestigial structures (D) None of the above
- 86. The structures which have similarity in function are:**
- (A) Analogous structures (B) Homologous structures
(C) Vestigial structures (D) None of the above
- 87. Match convergent evolution with one of the followings:**
- (A) Analogy (B) Homology
(C) Anatomy (D) Paleontology
- 88. The number of alleles of a recessive character in a population is 300 out of total of 100. Its frequency is:**
- (A) 0.7 (B) 0.3
(C) 0.5 (D) 0.4
- 89. There are 160 heterozygous plants in total of 500. Its genotypic frequency will be:**
- (A) 0.64 (B) 0.32
(C) 0.04 (D) 0.44
- 90. Hardy-Weinberg law is used to measure:**
- (A) Gene pool (B) Allelic ratio
(C) Allelic frequency (D) None of the above
- 91. In allelic frequency $P + Q =$**
- (A) 0.2 (B) 0.8
(C) 1.0 (D) 2.0
- 92. In a population $P = 0.8$ and $Q = 0.2$, the allelic frequency of the heterozygous will be:**
- (A) 0.64 (B) 0.32
(C) 0.04 (D) 1.00

93. In a population $P = 0.8$ and $Q = 0.2$, the allelic frequency of the recessive trait will be:
- (A) 0.64 (B) 0.32
(C) 0.04 (D) 1.00
94. Which of the followings cannot change allelic frequency?
- (A) Genetic drift (B) Random mating
(C) Section (D) Migration
95. Which of the followings can change allelic frequency?
- (A) Genetic drift (B) Migration
(C) Section (D) All of the above
96. The forest of the world have been reduced by:
- (A) 30% (B) 44%
(C) 54% (D) 60%
97. The main reason of the extinction of the species is:
- (A) Pollution (B) Over population
(C) Habitat destruction (D) Rain
98. The measure to prevent the extinction of species is:
- (A) Pollution control (B) Supply of water
(C) National parks (D) Breeding
99. The evolution of photosynthetic prokaryotes took place due to:
- (A) High concentration of CO_2 in atmosphere
(B) High concentration of O_2 in atmosphere
(C) Limited supply of nutrient sources
(D) High temperature in the primitive environment
100. The theory of special creation says:
- (A) All living organisms formed from ancestors
(B) All living organisms formed spontaneously
(C) All living organisms formed by divine
(D) None of the above

- 101. The theory of natural selection says:**
- (A) All living organisms formed from ancestors
 - (B) All living organisms formed spontaneously
 - (C) All living organisms formed by divine
 - (D) None of the above
- 102. Evolution is a:**
- (A) Change of shape of body
 - (B) Change of body form
 - (C) Change of gene frequency
 - (D) Change of body organs
- 103. The evolution of aerobic prokaryotes took place due to:**
- (A) High concentration of CO₂ in atmosphere
 - (B) High concentration of O₂ in atmosphere
 - (C) Limited supply of nutrient sources
 - (D) High temperature in the primitive environment
- 104. An acquired character is:**
- (A) A character inherited by an organism
 - (B) It can pass from parent to offspring
 - (C) It never passes from parent to offspring
 - (D) It provides raw material for evolution
- 105. According to endosymbiotic theory mitochondria is:**
- (A) Cellular body which produce energy
 - (B) Anaerobic bacteria which produces energy
 - (C) Aerobic bacteria which produces energy
 - (D) Photosynthetic bacteria undergoes photosynthesis
- 106. According of endosymbiotic theory chlorophyll is:**
- (A) Cellular body which produce energy
 - (B) Anaerobic bacteria which produce energy
 - (C) Aerobic bacteria which produce energy
 - (D) Photosynthetic bacteria undergoes photosynthesis

- 107. The main objection on Lamarckism was that:**
- (A) A character inherited by an organism
 - (B) It can pass from parent to offspring
 - (C) It cannot pass from parent to offspring
 - (D) It provides raw material for evolution
- 108. The observation of the Darwin about the species of Galapagos was that:**
- (A) They do not resemble with other species
 - (B) They show resemblance with the South American species
 - (C) They have ancestors only in Galapagos
 - (D) None of the above
- 109. Descent with modification means:**
- (A) All organisms show resemblances
 - (B) The organisms do not show resemblances
 - (C) The organisms show resemblances but later change
 - (D) None of the above
- 110. Neo Darwinism means:**
- (A) Concept of evolution on the basis of population genetics
 - (B) Concept of evolution on the basis of Mendalism
 - (C) Concept of evolution on the basis of natural selection
 - (D) All of the above
- 111. Homologous structures:**
- (A) Have same structures but different functions
 - (B) Have same functions but different structures
 - (C) Have different structures and function
 - (D) None of the above
- 112. Analogous structures:**
- (A) Have same structures but different functions
 - (B) Have same functions but different structures
 - (C) Have different structures and functions
 - (D) None of the above

- 113. Which is actual evidence supporting the endosymbiotic theory for the origin of eukaryotes?**
- (A) Fossil evidence suggest early eukaryotes ate Proteobacteria
 - (B) Free-living mitochondria still exist in some environments
 - (C) Mitochondria and chloroplasts have their own DNA
 - (D) All of the above are true
- 114. Why do scientists think RNA, rather than DNA, may have been the original genetic material?**
- (A) Most organisms on Earth use RNA as their genetic material
 - (B) The simplest life forms, viruses, use RNA
 - (C) RNA is more stable than DNA
 - (D) RNA has the ability to catalyze a few simple, chemical reactions
- 115. A total of 1700 US Caucasian newborns have cystic fibrosis. C for normal is dominant over c for cystic fibrosis. What percent age of the above population have cystic fibrosis (cc of q^2)?**
- (A) 0.059%
 - (B) 0.023%
 - (C) 0.015%
 - (D) 0.034%
- 116. How many of the 1700 (IN THE ABOVE STATEMENT) of the population are homozygous normal?**
- (A) 1260
 - (B) 1620
 - (C) 100
 - (D) 1001
- 117. How many of the 1700 (IN THE ABOVE STATEMENT) in the population are heterozygous (carrier)?**
- (A) 79.56%
 - (B) 86%
 - (C) 92.15%
 - (D) 22.54%
- 118. If 9% of an African population is born with a severe form of sickle-cell anemia (ss), what percentage of the population will be more resistant to malaria because they are heterozygous(Ss) for the sickle-cell gene?**
- (A) 42%
 - (B) 20%
 - (C) 30%
 - (D) 0%

- 119.** There are 100 students in a class. Ninety-six did well in the course whereas four blew it totally and received a grade of F. Sorry. In the highly unlikely event that these traits are genetic rather than environmental, if these traits involve dominant and recessive alleles, and if the four (4%) represent the frequency of the homozygous recessive condition, please calculate the following:
- (a) The frequency of the recessive allele:
- (A) 20% (B) 60%
(C) 34% (D) 47%
- (b) The frequency of the dominant allele:
- (A) 20% (B) 60%
(C) 80% (D) 10%
- (c) The frequency of heterozygous individuals:
- (A) 22% (B) 24%
(C) 26% (D) 32%
- 120.** A very large population of randomly-mating laboratory mice contains 35% white mice. White coloring is caused by the double recessive genotype, "aa" genotypic frequencies for this population is:
- (A) 5 (B) 6
(C) 0 (D) 1
- 121.** A rather large population of Biology instructors have 395 red-sided individuals and 557 tan-sided individuals. Assume that red is totally recessive, please calculate the following:
- (a) The allele frequencies of each allele:
- (A) 0.355 (B) 0.620
(C) 0.0222 (D) 0.156
- (b) The expected genotype frequencies:
- (A) 0.216 (B) 0.316
(C) 0.116 (D) 0.416
- (c) The number of heterozygous individuals that you would predict to be in this population:
- (A) About 436 (B) 480
(C) 225 (D) 400

Answers

Sr.	Ans.								
1.	(B)	2.	(C)	3.	(B)	4.	(C)	5.	(C)
6.	(A)	7.	(A)	8.	(C)	9.	(B)	10.	(A)
11.	(C)	12.	(A)	13.	(A)	14.	(C)	15.	(A)
16.	(A)	17.	(C)	18.	(B)	19.	(B)	20.	(A)
21.	(D)	22.	(A)	23.	(B)	24.	(D)	25.	(B)
26.	(A)	27.	(D)	28.	(D)	29.	(C)	30.	(A)
31.	(D)	32.	(D)	33.	(C)	34.	(B)	35.	(A)
36.	(B)	37.	(D)	38.	(D)	39.	(C)	40.	(B)
41.	(B)	42.	(B)	43.	(B)	44.	(C)	45.	(A)
46.	(B)	47.	(C)	48.	(C)	49.	(B)	50.	(D)
51.	(A)	52.	(C)	53.	(C)	54.	(D)	55.	(C)
56.	(D)	57.	(B)	58.	(B)	59.	(D)	60.	(C)
61.	(C)	62.	(D)	63.	(B)	64.	(C)	65.	(A)
66.	(B)	67.	(C)	68.	(D)	69.	(C)	70.	(C)
71.	(C)	72.	(C)	73.	(D)	74.	(B)	75.	(B)
76.	(B)	77.	(C)	78.	(C)	79.	(B)	80.	(B)
81.	(C)	82.	(B)	83.	(D)	84.	(B)	85.	(B)
86.	(A)	87.	(A)	88.	(B)	89.	(B)	90.	(C)
91.	(C)	92.	(B)	93.	(C)	94.	(B)	95.	(D)
96.	(B)	97.	(C)	98.	(C)	99.	(C)	100.	(C)
101.	(A)	102.	(C)	103.	(B)	104.	(C)	105.	(D)
106.	(C)	107.	(C)	108.	(B)	109.	(C)	110.	(D)

Sr.	Ans.	Sr.	Ans.	Sr.	Ans.	Sr.	Ans.	Sr.	Ans.
111.	(A)	112.	(B)	113.	(C)	114.	(B)	115.	(A)
116.	(B)	117.	(A)	118.	(A)	119.	(a) (A) (b) (C) (c) (D)	120.	(D)
121.	(a) (D) (b) (D) (c) (A) (d) (D) (e) (A)								

SCHOOLZ



ECOSYSTEM

- The term niche was first proposed by:**
(A) Ernst Haeckel (B) Hardy Weinberg
(C) Charles Eton (D) Joseph Grinnell
- One of the followings is not a biotic factor:**
(A) Decomposer (B) Producer
(C) Consumer (D) Lithosphere
- The organisms which obtain their energy from the dead and decaying plants and animals are called:**
(A) Producers (B) Decomposers
(C) Secondary consumers (D) Primary consumers
- Dermatocarpon is an example of:**
(A) Crustose lichen (B) Foliage lichen
(C) Moss (D) Herbaceous plant
- One of the followings is not the primary form of succession:**
(A) Derosere (B) Crustose
(C) Hydrosere (D) Xerosere
- Fungi causing dandruff is an example of:**
(A) Parasite (B) Endoparasite
(C) Symbiosis (D) Ectoparasite
- Lichens are an example of:**
(A) Root nodule (B) Mutualism
(C) Succession (D) Mycorrhiza
- Nitrogen makes following percent of gases in atmosphere:**
(A) 78% (B) 20%
(C) 80% (D) 0.03%

9. Study of a single population relationship to its environment is called as:
(A) Synecology (B) Autecology
(C) Ecology (D) Psychology
10. Major regional ecological community of plants and animals forms:
(A) Habitat (B) Niche
(C) Biomes (D) Biosphere
11. While studying the community we come across following levels of integration:
(A) Single level (B) Three level
(C) Two level (D) Four level
12. "Owls prey on rabbits and mice", this is an example of:
(A) Autecology (B) Community
(C) Food web (D) Food chain
13. Lichens are dual organism composed of symbiotic association of:
(A) Algae with bacteria (B) Fungi with roots of higher plant
(C) Algae with roots of higher plant (D) Algae with fungi
14. A short food chain of two or three links supports a community:
(A) Less efficiently (B) Efficiently
(C) Inefficiently (D) More efficiently
15. Following percent of total energy from the sun is trapped by the producers in an ecosystem:
(A) 1.0% (B) 90%
(C) 10% (D) 99%
16. All the food chains and food webs begin with:
(A) Decomposers (B) Producers
(C) Consumers (D) Tertiary consumers
17. One of the followings do not feed on grasses:
(A) Cow (B) Goat
(C) Tiger (D) Rabbit
18. As energy is transferred from one trophic level to next following percent of energy is lost:
(A) 70 – 80% (B) 60 – 70%
(C) 90 – 95% (D) 80 – 90%

- 19. The legume plants, pea and bean are the hosts:**
- (A) To symbiont virus (B) To symbiont bacteria
(C) To symbiont algae (D) To symbiont mosses
- 20. The branch of biology which deals with the study of relationship between organism and their environment:**
- (A) Biology (B) Ecology
(C) Morphology (D) Physiology
- 21. Joseph Grinnel:**
- (A) Niche (B) Single population
(C) Producer (D) Consumer
- 22. Ecology:**
- (A) Oikos (B) Producer
(C) Niche (D) Consumer
- 23. Autecology:**
- (A) Producer (B) Niche
(C) Consumer (D) Single population
- 24. Biotic component:**
- (A) Single population (B) Water
(C) Niche (D) Producer
- 25. Abiotic component:**
- (A) Pioneers (B) Lithosphere
(C) Rabbit and mice (D) Catter pillar
- 26. Eagle:**
- (A) Pioneers (B) Lithosphere
(C) Rabbit and mice (D) Catter pillar
- 27. Insects:**
- (A) Rabbit and mice (B) Blue bird
(C) Lithosphere (D) Catter pillar
- 28. Owl:**
- (A) Rabbit and mice (B) Pioneers
(C) Lithosphere (D) Catter pillar

- 29. Pond:**
(A) Hydrosere (B) Derosere
(C) Flower (D) Permellia
- 30. Dry soi:**
(A) Flower (B) Derosere
(C) Xerosere (D) Hydrosere
- 31. Foliage lichen:**
(A) Xerosere (B) Permellia
(C) Hydrosere (D) Flower
- 32. Dry habitat:**
(A) Xerosere (B) Hydrosere
(C) Flower (D) Permellia
- 33. Root nodules:**
(A) Insects and flowering plants (B) Fungi symbiont
(C) Legume plants (D) Biomass
- 34. Mycorrhiza:**
(A) Biomass (B) Fungi symbiont
(C) Legume plants (D) Insects and flowering plants
- 35. Mutualism:**
(A) Biomass (B) Insects and flowering plants
(C) Legume plants (D) Fungi symbiont
- 36. Net primary production:**
(A) Fungi symbiont (B) Mosquito
(C) Biomass (D) Legume plants
- 37. Many individuals of the same species living together in a defined area form:**
(A) Community (B) Genus
(C) Population (D) Ecosystem
- 38. Biological communities change because:**
(A) Each stage modifies the environment and adapts for a later stage
(B) The soil is depleted and food gives out
(C) Old species move out and new species move in
(D) Old species evolve into new species

45. During the growth of a tomato plant from a seed, it increases considerably in biomass. Which of the following materials, obtained from the environment, are necessary for the growth and increase in biomass?
- (A) Carbon dioxide, oxygen and nitrogen
(B) Water, nitrate and methane
(C) Water, carbon dioxide and mineral salts
(D) Mineral salts, carbon dioxide and oxygen
46. Nitrogen gas returns to the atmosphere by the action of:
- (A) Nitrogen fixing bacteria (B) Denitrifying bacteria
(C) Nitrifying bacteria (D) Nitrate fertilizers
47. A molecule of nitrogen which you have just breathed in may have been part of a plant that lived thousands of years ago, or part of a dinosaur that lived millions of years ago. This illustrates the principle that:
- (A) Dead organisms may be fossilized
(B) Molecules of cytoplasm may be replaced by inorganic salts
(C) Nitrogen does not combine readily with other elements
(D) Decay bacteria cycle elements
48. The sequence of energy flow through a food chain is:
- (A) Producers-higher order consumers-primary consumers
(B) Higher order consumers-primary consumers-producers
(C) Primary consumers-higher order consumers-producers
(D) Producers-primary consumers-higher order consumers
49. In a terrestrial ecosystem, the trophic level that would contain the largest biomass would be the:
- (A) Producers (B) Primary consumers
(C) Secondary consumers (D) Highest order consumers
50. A carrot plant is exposed to carbon dioxide containing radioactive carbon for 24 hours. After this exposure, the carrot roots are found to have accumulated radioactivity. These carrots are then fed to a rabbit. One week later, the rabbit's tissue is tested for radioactivity and is found to have a higher than normal background count. Which biogeochemical cycle is apparent from this study?
- (A) Oxygen (B) Mineral
(C) Carbon (D) Nitrogen

- 51. The rate of growth of a natural population:**
- (A) Always reaches the carrying capacity of the ecosystem
 - (B) is limited by the carrying capacity of the ecosystem
 - (C) When graphed, always has a positive slope
 - (D) Exceeds the death rate and rate of emigration
- 52. In the past decade, which of the followings has not been a major cause of the increase in the world's population?**
- (A) Longer life span
 - (B) Lower infant mortality
 - (C) Increase in birth rate
 - (D) Improved sanitation
- 53. Which of the followings is not a problem with ground water?**
- (A) Slow movement
 - (B) Increasing use rate
 - (C) Pollution
 - (D) Government ownership
- 54. Problems with ground water include slow movement, increasing use rate, and increasing rate of pollution. The term "detritivore" includes:**
- (A) Decomposers
 - (B) Primary consumers
 - (C) Secondary consumers
 - (D) Autotrophs
- 55. The category "detritivore" includes decomposers as well as scavengers. In a salt marsh, the meiofauna:**
- (A) Are represented by crabs and lobsters
 - (B) Include fish
 - (C) Are very small animals that live between the sand grains
 - (D) Are the algae
- 56. Net primary productivity is the gross primary productivity less:**
- (A) that which is consumed by herbivores
 - (B) that which is consumed by the producers in metabolism
 - (C) Secondary productivity
 - (D) Loss due to mortality
- 57. Net productivity is the gross productivity less that which is consumed by the producers in metabolism. Which of the followings does not contribute to the species diversity of the tropics?**
- (A) Predictability
 - (B) Predation
 - (C) Spatial homogeneity
 - (D) High productivity

- 58. What is happening to the amount of carbon dioxide in the atmosphere?**
(A) It is increasing (B) It is decreasing
(C) It is holding steady (D) It is fluctuating wildly
- 59. The major reservoir for phosphorus is:**
(A) Aquifers (B) Soil and rocks
(C) The atmosphere (D) the sun
- 60. The accumulation of herbivore biomass in an ecosystem is an example of:**
(A) Biogeochemical cycles (B) Transpiration
(C) Net primary productivity (D) Gross primary productivity
- 61. The process of converting nitrate to nitrogen gas and nitrous oxide is called:**
(A) Nitrogen fixation (B) Ammonification
(C) Denitrification (D) Eutrophication
- 62. Which of the followings is a secondary consumer?**
(A) A carnivore (B) A herbivore
(C) A plant (D) All of the above
- 63. Which of the following pyramids can never be inverted in a natural ecosystem?**
(A) Pyramid of numbers (B) Pyramid of energy
(C) Pyramid of biomass (D) All can be inverted
- 64. On an average, for a crop plant to produce one kilogram of food it requires how many kilograms of water?**
(A) 1 (B) 10
(C) 100 (D) 1000
- 65. Which of the followings contains a lot of carbon?**
(A) Fossil fuels (B) the oceans
(C) Peal (D) All of the above contain a lot of carbon
- 66. On an annual basis, approximately what percentage of all the CO₂ in the atmosphere is fixed by photosynthesis?**
(A) 100% (B) 70%
(C) 36% (D) 10%
- 67. Which of the following organisms is a primary consumer?**
(A) An autotroph (B) A horse parasite
(C) An oak tree parasite (D) A wolf

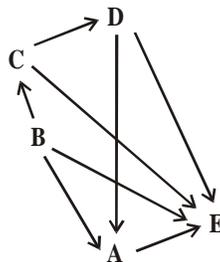
- 68. Of the fresh water in the United States, 96% consists of:**
- (A) Streams and rivers (B) Lakes and ponds
(C) Groundwater (D) Swimming pools
- 69. The earth is an open system with respect to:**
- (A) Organisms (B) Chemicals
(C) Energy (D) All of the above
- 70. Which of the following chemicals enters living organisms primarily from the atmosphere rather than from rocks or soil?**
- (A) Calcium (B) Sulfur
(C) Sodium (D) Carbon
- 71. Carbon dioxide makes up approximately what percentage of the atmosphere?**
- (A) 0.03% (B) 0.47%
(C) 21.0% (D) 78.0%
- 72. What type of organism carries out nitrogen fixation?**
- (A) Bacteria (B) Fungi
(C) Protists (D) All of the above
- 73. Which of the following communities is the most productive?**
- (A) Temperate forests (B) Tropical forests
(C) Savannas (D) Wetlands
- 74. Goats depend on autotrophs for the production of:**
- (A) O₂ (B) Glucose
(C) Both of the above (D) None of the above
- 75. The total amount of energy that is converted to organic compounds in a given area per unit of time is called the:**
- (A) Biomass (B) Transpiration
(C) Net primary productivity (D) Gross primary productivity
- 76. What percentage of sun's available energy do the plants capture, while the other trophic levels captures approximately:**
- (A) 1%, 10% (B) 10%, 60%
(C) 10%, 1% (D) 60%, 10%

77. **Which trophic level is incorrectly defined?**
- (A) Carnivores – secondary or tertiary consumer
 - (B) Decomposers – microbial heterotrophs
 - (C) Herbivores – primary consumer
 - (D) Omnivores – molds, yeasts and mushrooms
78. **Carnivores represent what trophic level?**
- (A) Producers
 - (B) Primary consumers
 - (C) Secondary consumers
 - (D) Decomposers
79. **The amount of energy actually incorporated into the biomass of phototrophs is:**
- (A) Gross primary productivity
 - (B) Net primary productivity
 - (C) Standing crop biomass
 - (D) Transpiration
80. **What is true of turnover rates of chemicals in ecosystems?**
- (A) Turnover is faster in summer than in winter
 - (B) Residence time is usually of the order of years for terrestrial ecosystems
 - (C) Residence time in lakes during the summer is only a few minutes
 - (D) All of these are true statements
81. **The hydrologic cycle is driven primarily by:**
- (A) Evapotranspiration from plants
 - (B) Rainfall
 - (C) Snowmelt
 - (D) Percolation of water through the soil
82. **The conversion of atmospheric free nitrogen gas to ammonia occurs through the activities of certain bacteria and cyanobacteria:**
- (A) Nitrogen fixation
 - (B) Denitrification
 - (C) Nitrification
 - (D) Oxidation
83. **Which one of the followings would be a detritivore?**
- (A) A snake
 - (B) A mouse
 - (C) A bacterium
 - (D) A deer
84. **Organisms in trophic level 3 are:**
- (A) Detritivores
 - (B) Herbivores
 - (C) Carnivores
 - (D) Producers
85. **Which of the followings are producers?**
- (A) Termites
 - (B) Bacteria
 - (C) Algae
 - (D) Grasshoppers

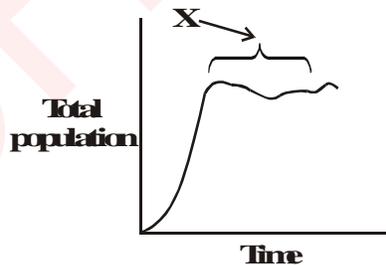
86. Which of the following levels of organization is arranged in the correct sequence starting from most to least inclusive?
- (A) Community, ecosystem, individual, population
(B) Individual, population, community, ecosystem
(C) Ecosystem, community, population, individual
(D) Individual, community, population, ecosystem
87. Species transplant experiments are one way of determining:
- (A) the distribution of a species in a specified area
(B) the abundance of a species in a specified area
(C) if dispersal is a key factor in limiting distribution
(D) the strength of interspecific interactions in an area
88. If a meteor impact or volcanic eruption injected a lot of dust into the atmosphere and reduced sunlight reaching Earth's surface by 70% for one year, all of the following communities would be greatly affected except a:
- (A) Forest community (B) Deep-sea vent community
(C) Oligotrophic lake community (D) Eutrophic lake community
89. A population is correctly defined as having which of the following characteristics?
- I. Inhabiting the same general area
II. Individuals belonging to the same species
III. Possessing a constant and uniform density and dispersion
- (A) I only (B) III only
(C) I and II only (D) II and III only
90. To measure the population density of monarch butterflies occupying a particular park, 100 butterflies are captured, marked with a small dot on a wing, and then released. The next day, another 100 butterflies are captured, including the recapture of 20 marked butterflies. One would correctly estimate the population to be:
- (A) 20 (B) 100
(C) 200 (D) 500
91. The pattern of dispersion for a certain species of kelp is clumped. The pattern of dispersion for a certain species of snail that lives only on this kelp would likely be:
- (A) Clumped (B) Demographic
(C) Random (D) Uniform

- 92. Natural selection has led to the evolution of diverse natural history strategies. Which of the following characteristics do these different natural history strategies have in common?**
- (A) Maximum lifetime reproductive success
 - (B) Many offspring per reproductive episode
 - (C) Relatively large offspring
 - (D) Multiple reproductive episodes per lifetime
- 93. Carrying capacity (K):**
- (A) Differs among species, but does not vary within a given species
 - (B) is calculated as the product of intrinsic growth rate (r) and population size (N)
 - (C) Remains constant in all environments
 - (D) is often determined by resource limitation
- 94. All of the statements regarding models of logistic population growth are correct except:**
- (A) Population growth rate slows as N approaches K
 - (B) Density-independent factors limit population growth
 - (C) Density-dependent factors limit population growth
 - (D) Intraspecific interactions limit population growth
- 95. In which of the following habitats would you expect to find the largest number of K-selected individuals?**
- (A) a recently abandoned field in Ohio
 - (B) a newly emergent volcanic island
 - (C) South Florida after a hurricane
 - (D) the rain forests of Brazil
- 96. All of the following can contribute to density-dependent regulation of population except:**
- (A) Intraspecific competition for nutrients
 - (B) Interspecific competition for space
 - (C) Annual temperature increases
 - (D) Herbivory

97. Which of the following statements is most consistent with the interactive hypothesis?
- (A) Communities lack discrete geographic boundaries
(B) Species are distributed independently of other species
(C) The community functions as an integrated unit
(D) The composition of plant species seems to change on a continuum
98. All of the followings act to increase species diversity except:
- (A) Keystone predators (B) Competitive exclusion
(C) Migration of populations (D) Moderate disturbances
99. Two barnacles, *Balanus* and *Chthamalus*, can both survive on the lower rocks just above the low tide line on the Scottish coast, but only *Balanus* actually does so, with *Chthamalus* living in a higher zone. Which of the followings is the most likely cause of this niche separation?
- (A) Primary succession (B) Mutualism
(C) Competitive exclusion (D) Predation of *Chthamalus* by *Balanus*
100. Resource partitioning would be most likely to occur between:
- (A) Sympatric populations of a predator and its prey
(B) Sympatric populations of a flowering plant and its specialized insect pollinator
(C) Allopatric populations of the same animal species
(D) Sympatric populations of species with similar ecological niches
101. Which of the followings is an example of Batesian mimicry?
- (A) A snapping turtle that uses its tongue to mimic a worm, thus attracting fish
(B) A butterfly that resembles a leaf
(C) A nonvenomous snake that looks like a venomous snake
(D) A fawn with fur coloring that camouflages it in the forest environment
102. Evidence shows that some grasses benefit from being grazed. Which of the following terms would best describe this plant-herbivore interaction?
- (A) Predation (B) Mutualism
(C) Competition (D) Parasitism
103. The diagram below shows a food web found in a particular ecosystem.



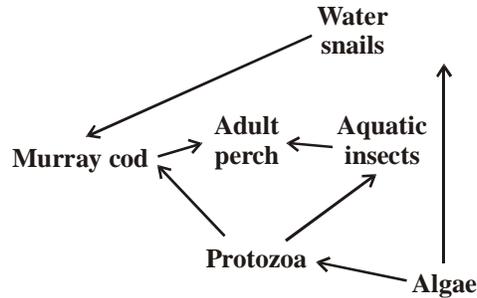
- From this diagram, we can conclude that A, B and C respectively are:
- (A) A producer, a herbivore and a decomposer
 - (B) An omnivore, a producer and a herbivore
 - (C) A decomposer, a carnivore and a producer
 - (D) A herbivore, a decomposer and an omnivore
104. Organism E in question1 is:
- (A) A producer
 - (B) A herbivore
 - (C) A decomposer
 - (D) A carnivore
105. The most appropriate method for estimating a population of a fixed plant species would be:
- (A) the random quadrant method
 - (B) the 'capture-recapture' method
 - (C) Estimating the percentage cover of the species
 - (D) Drawing a line transect
106. Many eucalypt species produce toxic chemicals that inhibit the growth of seedlings of other species underneath their canopies. This is an example of:
- (A) Mutualism
 - (B) Commensalism
 - (C) Parasitism
 - (D) Competition
107. Three biotic factors that can affect the distribution and abundance of a particular species are:
- (A) Competition, temperature and type of vegetation present
 - (B) Predation, competition and disease
 - (C) Rainfall, available light and soil depth
 - (D) Salinity, competition and available food
108. The growth curve below shows the changes in an insect population over time:



The levelling off of the curve at 'X' is most likely due to:

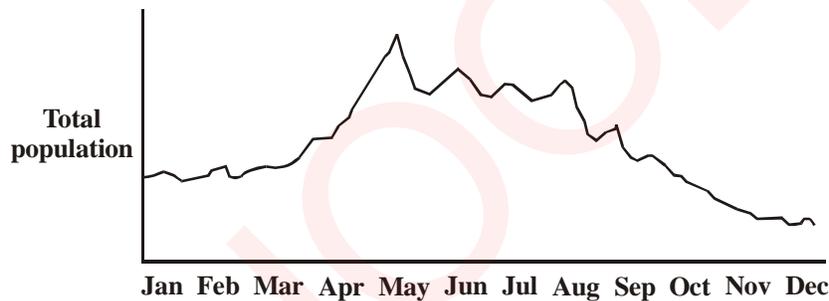
- (A) Competition within the species for the same resources
- (B) The introduction of a predator species
- (C) A sudden change in one of the abiotic features of all the ecosystem
- (D) Migration of the insect species to another ecosystem

109. The diagram below shows a typical food web from a freshwater ecosystem.



The earliest effect of a sudden decrease in the adult perch population would be:

- (A) An increase in the Murray cod population
 - (B) A decrease in the protozoan population
 - (C) A decrease in the population of aquatic insects
 - (D) An increase in the biomass of algae
110. The curve below shows changes in the numbers of unicellular alga, *Chlamydomonas*, in North American waters over a one-year period:



The increase in numbers of *Chlamydomonas* between April and August is most likely due to:

- (A) An increase in herbivorous water snails
- (B) An increase in the amount of organic food matter
- (C) An increase in the temperature of surface waters during this period
- (D) A decrease in the amount of dissolved nutrients available

Answers

Sr.	Ans.								
1.	(D)	2.	(D)	3.	(B)	4.	(B)	5.	(B)
6.	(D)	7.	(B)	8.	(A)	9.	(B)	10.	(C)
11.	(B)	12.	(C)	13.	(D)	14.	(D)	15.	(A)
16.	(B)	17.	(C)	18.	(D)	19.	(B)	20.	(B)
21.	(A)	22.	(A)	23.	(D)	24.	(D)	25.	(B)
26.	(C)	27.	(D)	28.	(A)	29.	(A)	30.	(B)
31.	(B)	32.	(A)	33.	(C)	34.	(B)	35.	(B)
36.	(C)	37.	(C)	38.	(A)	39.	(C)	40.	(C)
41.	(C)	42.	(A)	43.	(A)	44.	(A)	45.	(D)
46.	(B)	47.	(C)	48.	(D)	49.	(A)	50.	(C)
51.	(B)	52.	(A)	53.	(D)	54.	(B)	55.	(C)
56.	(B)	57.	(C)	58.	(C)	59.	(A)	60.	(C)
61.	(C)	62.	(B)	63.	(B)	64.	(D)	65.	(D)
66.	(D)	67.	(C)	68.	(C)	69.	(C)	70.	(D)
71.	(A)	72.	(D)	73.	(B)	74.	(C)	75.	(D)
76.	(A)	77.	(D)	78.	(C)	79.	(B)	80.	(D)
81.	(A)	82.	(A)	83.	(C)	84.	(C)	85.	(C)
86.	(C)	87.	(B)	88.	(B)	89.	(C)	90.	(D)
91.	(A)	92.	(A)	93.	(D)	94.	(B)	95.	(D)
96.	(C)	97.	(C)	98.	(B)	99.	(D)	100.	(D)
101.	(C)	102.	(B)	103.	(A)	104.	(C)	105.	(A)
106.	(D)	107.	(C)	108.	(C)	109.	(A)	110.	(C)

SCHOOLZ



26
CHAPTER

SOME MAJOR ECOSYSTEMS

- The earth's climates are primarily effected by the circulation pattern of:**
(A) The benthic zone (B) The lithosphere
(C) The atmosphere (D) Phytoplankton
- Which biome supports the greatest species diversity?**
(A) Coniferous forest (B) Deciduous forest
(C) Grassland (D) Tropical rain forest
- Which biome supports the least species diversity?**
(A) Tundra (B) Tropical rain forest
(C) Grassland (D) Desert ecosystem
- Which biome is characterized by plants that lose their leaves each autumn?**
(A) Grassland (B) Desert
(C) Deciduous forest (D) Coniferous forest
- Which of the followings is an essential requirement for life?**
(A) Water (B) Soil
(C) CO (D) Wild life
- Grassland in tropic climates have woody trees and are called:**
(A) Pampas (B) Prairies
(C) Velt (D) Savanna
- The average annual rain fall of temperate deciduous forests is between:**
(A) 100-750 mm (B) 750-1500 mm
(C) 1500-2000 mm (D) 1000-1500 mm

8. **Coniferous forests of high altitude are known as:**
(A) Alpine (B) Arctic
(C) Boreal (D) Tundra
9. **Deserts generally occur in region where annual rain fall is less than:**
(A) 15-20 cm (B) 5-10 cm
(C) 250-270 cm (D) 25-50 cm
10. **Cacti and Euphorbia are desert plants which store water in their:**
(A) Leaves (B) Root
(C) Stem (D) Bunds
11. **Primary consumer animals may also be called as:**
(A) Carnivores (B) Decomposers
(C) Herbivores (D) Omnivores
12. **Limnetic phytoplanktons include:**
(A) Crustaceans (B) Cynobacteria
(C) Rotifers, fishes and planktons (D) Protozoan
13. **The zone of deep standing water under the limnetic zone is known as:**
(A) Profundal zone (B) Benthic zone
(C) Limnetic zone (D) Littoral zone
14. **In temperate grassland the rate of primary production is about:**
(A) 1000-2000 g/m² annually (B) 100-600 g/m² annually
(C) 700-1500 g/m² annually (D) 8000-18000 g/m² annually
15. **Which of the followings is not correctly matched?**
(A) Herbivores : Autotroph (B) Producer : Autotroph
(C) Carnivores : Consumer (D) Producer : Plants
16. **Distribution of biomes on earth is primarily due to pattenrs of:**
(A) Animal and predators (B) temperature and rainfall
(C) Soil and animal (D) Wind and soil
17. **Herbivores:**
(A) Tundra (B) Plant eater
(C) A lake's open lighted water (D) Coniferous forests at high altitude

- 18. Limnetic zone:**
(A) A lake's open lighted water (B) Dominated by evergreen trees
(C) Tundra (D) Plant eater
- 19. Boreal:**
(A) Tundra (B) Plant eater
(C) Coniferous forests at high altitude (D) A lake's open lighted water
- 20. Coniferous forest:**
(A) A lake's open lighted water (B) Dominated by evergreen trees
(C) Tundra (D) Plant eater
- 21. Lichen:**
(A) Desert (B) Reindeer moss
(C) Fungi (D) Stipa
- 22. Decomposer:**
(A) Desert (B) Fungi
(C) Reindeer moss (D) Stipa
- 23. Thal:**
(A) Stipa (B) Desert
(C) Fungi (D) Reindeer moss
- 24. Primary consumer:**
(A) Grasshopper (B) Fungi
(C) Reindeer moss (D) Stipa
- 25. Climate:**
(A) Region of deep water zone (B) Region of shallow water at lake's edge
(C) Autotroph (D) Prevailing weather in an area
- 26. Littoral zone:**
(A) Region of deep water zone
(B) Autotroph
(C) One criterion used in constructing ecological pyramids
(D) Region of shallow water at lake's edge

- 27. Biomass:**
- (A) One criterion used in constructing ecological pyramids
 - (B) Prevailing weather in an area
 - (C) Region of deep water zone
 - (D) Autotroph
- 28. Primary producer:**
- (A) Prevailing weather in an area
 - (B) Region of deep water zone
 - (C) Autotroph
 - (D) One criterion used in constructing ecological pyramids
- 29. Profundal zone:**
- (A) Drifting plant
 - (B) High altitude
 - (C) Refers to lake floor
 - (D) Submerged plant
- 30. Ecosystem:**
- (A) Refers to lake floor
 - (B) Submerged plant
 - (C) High altitude
 - (D) Include the community and physical environment
- 31. Arctic tundra:**
- (A) Drifting plant
 - (B) Refers to lake floor
 - (C) Submerged plant
 - (D) High altitude
- 32. Phytoplankton:**
- (A) High altitude
 - (B) Drifting plant
 - (C) Submerged plant
 - (D) Refers to lake floor
- 33. The soil of terrestrial ecosystems have some adaptations for animals and plants:**
- (A) Supporting tissues
 - (B) Retention of food
 - (C) Temperature
 - (D) Nutrients
- 34. Most plants fit only into a few ecosystems, which type of plant seems in ecosystem of grassland:**
- (A) Trees
 - (B) Shrubs
 - (C) Perennial herbs
 - (D) Annual weeds

35. In which type of ecosystem, the smallest fraction of nutrients is present in soil?
- (A) Savanna (B) Tundra
(C) Grassland (D) Desert
36. What biome will be with richest soil with nutrients and can be converted into agriculture?
- (A) Deciduous forests (B) Tropical rain forest
(C) Grassland (D) Coniferous forest
37. Which of the biomes has been increased in area by human activities?
- (A) Savanna (B) Grassland
(C) Desert (D) Coniferous
38. Salt-water ocean and sea being the largest ecosystems on earth occupy about what percentage of its surface.
- (A) 1% (B) 50%
(C) 71% (D) 85%
39. Fresh water ecosystem covers less than:
- (A) 1% (B) 50%
(C) 75% (D) 95%
40. Which ecosystem is divided into littoral, limnetic and profundal zones?
- (A) Fresh water lakes (B) Temperate deciduous forests
(C) Tundra (D) Desert
41. Which one is not correct for littoral zone?
- (A) Shallow water (B) Abundant light
(C) Planktons (D) Detritus feeders
42. Which one is not related with process of eutrophication?
- (A) Excessive growth of phytoplanktons
(B) Depletion of oxygen
(C) Foul smelling gases like H₂S
(D) Fish dominate the community
43. Which one is not a forest ecosystem?
- (A) Tropical rain ecosystem (B) Grassland ecosystem
(C) Temperate deciduous ecosystem (D) Coniferous alpine and boreal forest

44. **Average rain fall in temperate deciduous forest is:**
(A) 750 – 1500 mm (B) 500 – 1000 mm
(C) 250 – 750 mm (D) 1500 – 3000 mm
45. **Northern coniferous forests are called:**
(A) Alpine (B) Boreal
(C) Talga (D) Tundra
46. **Grasslands in temperate climates are called:**
(A) Prairies (B) Savanna
(C) Taiga (D) Tundra
47. **The dominant plants of grasslands are:**
(A) Trees (B) Legumes
(C) Graminoids (D) Shrubs
48. **What is the annual rate of primary production in temperate grassland?**
(A) 300 – 400 g/m² (B) 700 – 1500 g/m²
(C) 1500 – 4000 g/m² (D) More than 4000 g/m²
49. **Annual rainfall in deserts is less than:**
(A) 1500 mm (B) 1000 mm
(C) 750 mm (D) 250 mm
50. **Which one is not a desert?**
(A) Thal (B) Thar
(C) Sahara (D) Taiga
51. **The largest desert in the world is:**
(A) Gobi (B) Sahara
(C) Thar (D) Thal
52. **The Sahara desert is found in:**
(A) Asia (B) America
(C) Africa (D) Europe
53. **Gobi desert is found in:**
(A) Australia (B) Sindh
(C) Cholistan (D) Mongolia

Answers

Sr.	Ans.								
1.	(C)	2.	(D)	3.	(A)	4.	(C)	5.	(A)
6.	(D)	7.	(B)	8.	(A)	9.	(D)	10.	(C)
11.	(C)	12.	(B)	13.	(A)	14.	(C)	15.	(A)
16.	(B)	17.	(B)	18.	(A)	19.	(C)	20.	(B)
21.	(B)	22.	(B)	23.	(B)	24.	(A)	25.	(D)
26.	(D)	27.	(A)	28.	(C)	29.	(C)	30.	(D)
31.	(D)	32.	(B)	33.	(A)	34.	(C)	35.	(D)
36.	(C)	37.	(C)	38.	(C)	39.	(A)	40.	(A)
41.	(D)	42.	(D)	43.	(B)	44.	(A)	45.	(C)
46.	(A)	47.	(C)	48.	(B)	49.	(D)	50.	(D)
51.	(B)	52.	(C)	53.	(D)	54.	(D)	55.	(C)
56.	(D)	57.	(D)						



MAN AND HIS ENVIRONMENT

- What is the harm from the depletion of Earth's ozone layer?**
 - The average temperature of earth's surface will increase gradually
 - The oxygen content of the atmosphere will decrease
 - Increased amount of ultra violet radiation will reach earth's surface
 - Sea levels will rise as the polar ice caps will gradually melt
- Acid rain is formed due to contribution from the following pair of gases:**
 - Methane and ozone
 - Oxygen and nitrous oxide
 - Methane and sulphur dioxide
 - Carbon dioxide and sulphur dioxide
- Which of the followings is a prime health risk associated with greater UV radiation through the atmosphere due to depletion of stratospheric ozone?**
 - Damage to digestive system
 - Increased liver cancer
 - Neurological disorder
 - Increased skin cancer
- The most serious environmental effect posed by hazardous wastes is:**
 - Air pollution
 - Contamination of groundwater
 - Increased use of land for landfills
 - Destruction of habitat
- The concentration of which gas is highest in our environment?**
 - Oxygen
 - Hydrogen
 - Nitrogen
 - Carbon dioxide
- Which of the followings is not due to global warming?**
 - Rising sea level
 - Increased agricultural productivity worldwide
 - Worsening health effects
 - Increased storm frequency and intensity

7. Which of the followings is not a primary contributor to the greenhouse effect?
- (A) Carbon dioxide (B) Carbon monoxide
(C) Chlorofluorocarbons (D) Methane gas
8. The increase in the concentration of CO₂ in our environment in last fifty years is about:
- (A) 20% (B) 10%
(C) 14% (D) 6%
9. The depletion in the ozone layer is caused by:
- (A) Nitrous oxide (B) Carbon dioxide
(C) Chlorofluorocarbons (D) Methane
10. A major in-stream use of water is for:
- (A) Producing hydroelectric power (B) Dissolving industrial wastes
(C) Agricultural irrigation (D) Domestic use
11. Which of the followings is the example of municipal and industrial discharge pipes?
- (A) Non-point source of pollution (B) Violations of the clean water act
(C) Point sources of pollution (D) Irrigation
12. The presence of high coliform counts in water indicate:
- (A) Contamination by human wastes
(B) Phosphorus contamination
(C) Decreased biological oxygen demand
(D) Hydrocarbon contamination
13. How the biological oxygen demand gets affected with the increased presence of organic matter in water?
- (A) The oxygen demand increases
(B) The oxygen demand decreases
(C) The oxygen demand remains unchanged
(D) None of the above

14. Which of the followings is not a major source of groundwater contamination?
- (A) Agricultural products
 - (B) Landfills
 - (C) Septic tanks
 - (D) All of the above are major sources of groundwater contamination
15. Which of the following is not considered as part of water use planning?
- (A) Waste water treatment
 - (B) Water diversion projects
 - (C) Storm sewer drainage
 - (D) Water use planning considers all of the above issues
16. The stage in which the biological processes are used to purify water in a wastewater treatment plants is called:
- (A) Secondary sewage treatment
 - (B) Primary sewage treatment
 - (C) Wastewater reduction
 - (D) Biochemical reductio
17. Groundwater mining in coastal areas can result into:
- (A) Increase in the salinity of groundwater
 - (B) Decrease in the toxicity of groundwater
 - (C) Decrease in the salinity of groundwater
 - (D) Increase in the water table
18. Which of the followings is not an important characteristic of the green revolution?
- (A) Mechanized agriculture
 - (B) Hybrid seeds
 - (C) Hybrid seeds
 - (D) Slash and burn
19. The three primary soil macronutrients are:
- (A) Carbon, oxygen and water
 - (B) Copper, cadmium and carbon
 - (C) Potassium, phosphorus and nitrogen
 - (D) Boron, zinc and manganese
20. Which of the followings has negative effects on the soil and water due to conventional, mechanized farming practices?
- (A) Soil compaction
 - (B) Reduction in soil organic matter
 - (C) Soil erosion
 - (D) All of the above

- 21. Non-renewable resources include various metals, non-metallic minerals and:**
- (A) Fossil fuels (B) Coal
(C) Petrol (D) Oil
- 22. CFCs released from:**
- (A) Vehicles (B) TV
(C) Refrigerator (D) Factories
- 23. The nuclear energy is derived by splitting the nucleus of:**
- (A) Radioactive atom (B) Radioactive cell
(C) Radioactive substance (D) Radioactive element
- 24. Methane gas is produced during the scientific processes of:**
- (A) Incineration (B) Hydrogenation
(C) Pyrolysis (D) Bioconversion
- 25. The global human population grew very slowly until:**
- (A) The origin of agriculture (B) The industrial revolution
(C) Hunter-gatherer societies emerged (D) The 1970
- 26. The first stage in demographic transition is:**
- (A) An increase in population growth (B) An increase in birth rate
(C) A decline in population growth (D) A decrease in death rate
- 27. Population growth is an environmental issue because:**
- (A) Human create pollution
(B) Human population are growing quickly
(C) Humans are dependent on the environment for their existence
(D) All of the above
- 28. In 1947, at the time of independence the population of Pakistan was:**
- (A) 35.5 million (B) 38.5 million
(C) 32.5 million (D) 33.5 billion
- 29. Solving environmental problems is ultimate responsibility of:**
- (A) Religion (B) The government
(C) Individual (D) Educational institution

- 30. The burning of fossil fuel contributes to all of the following except:**
- (A) Global warming (B) Acid rain
(C) It contribute to all of the above (D) Ozone depletion
- 31. Which of the following substance does not contribute to the greenhouse effect?**
- (A) CFC's (B) Nitrogen
(C) CO₂ (D) Methane
- 32. Which of the followings is the primary cause of acid rain?**
- (A) Burning tropical forests (B) Nuclear power station
(C) CFC's (D) Burning high sulfur coal
- 33. Which substance destroys ozone?**
- (A) Hydrogen (B) Chlorine
(C) Carbon (D) Sulfur
- 34. What is the primary cause of species extinction today?**
- (A) Habitat loss (B) Population
(C) Introduction of competing species (D) Over hunting
- 35. Which of the followings is not caused by deforestation?**
- (A) All result from deforestation (B) Soil erosion
(C) Increases carbon dioxide (D) Loss of biodiversity
- 36. Eutrophication of a lake occurs as a result of:**
- (A) Nutrient overloads (B) Biological magnification
(C) Acid rain (D) Pesticide run off
- 37. Which of the following statements about ozone depletion is not correct?**
- (A) An ozone hole was discovered over antarctica
(B) CFC's are found in some air conditioning system
(C) Ozone in the upper atmosphere is beneficial because it absorbs infrared radiation
(D) At ground level ozone is a pollutant
- 38. A chemical, which kills the weed in a crop is known as:**
- (A) Herbicide (B) Germicide
(C) Pesticide (D) Insecticide

- 39. Hydroelectric power is the electric power generated by the energy of:**
- (A) Flowing water (B) Dam water
(C) River water (D) Falling water
- 40. Mental illness:**
- (A) Alzheimer (B) Population explosion
(C) Scurvy (D) Burning of fossil fuel
- 41. Oxide of nitrogen:**
- (A) Population explosion (B) Scurvy
(C) Alzheimer (D) Burning of fossil fuel
- 42. Disease prevention medicine and food hygiene:**
- (A) Population explosion (B) Burning of fossil fuel
(C) Scurvy (D) Alzheimer
- 43. Nutrition deficiency:**
- (A) Congenital diseases (B) Population explosion
(C) Alzheimer (D) Scurvy
- 44. Greenhouse effect:**
- (A) Increase CO₂ (B) Fungi
(C) Air pollutant (D) Insects
- 45. Lead compound:**
- (A) Insects (B) Fungi
(C) Renewable resource (D) Air pollutant
- 46. Insecticide:**
- (A) Renewable resource (B) Fungi
(C) Insects (D) Air pollutant
- 47. Water:**
- (A) Insects (B) Renewable resource
(C) Air pollutant (D) Fungi
- 48. CO:**
- (A) 2% (B) Fresh water in lakes
(C) 20% (D) Brain damage

- 49. Less than 1%:**
(A) Fresh water in lakes (B) 20%
(C) Upper layer of earth's crust (D) 2%
- 50. Oxygen in air:**
(A) 20% (B) Upper layer of earth's crust
(C) 2% (D) Fresh water in lakes
- 51. Soil:**
(A) Fresh water in lakes (B) Upper layer of earth's crust
(C) Brain damage (D) 20%
- 52. Taj Mahal:**
(A) Kwashiorkor (B) Stone monuments
(C) Eutrophication (D) UV radiation
- 53. Hormonal disorder:**
(A) Stone monuments (B) Cretinism
(C) Kwashiorkor (D) Eutrophication
- 54. Phosphate:**
(A) Eutrophication (B) UV radiation
(C) Kwashiorkor (D) Stone monuments
- 55. Which of the followings is not a major greenhouse gas?**
(A) Carbon dioxide (B) Methane
(C) Ozone (D) Water vapour
- 56. The reason for signing 1987 Montreal Protocol was:**
(A) To stop global trade of products made from endangered animals
(B) To do away with the use CFC's which were found to be responsible for depletion of the ozone layer
(C) To prohibit and ban nuclear testing in tropical deserts and oceans
(D) To start using renewable sources of energy instead of fossil fuels to reduce the anthropogenic greenhouse effect
- 57. Which of the following countries is the largest source of carbon dioxide emissions from fossil fuel burning?**
(A) Countries of the former U.S.S.R. (B) Developing nations
(C) North America (D) Japan and China

58. Which of the following results are not affected due to depletion of the stratospheric ozone layer?
- (A) Greater incidence of premature skin aging
 - (B) Higher rates of lung cancer
 - (C) Higher rates of skin cancer
 - (D) Enhanced incidence of severe sunburns
59. As a result of rising global temperatures following two major impacts are expected:
- (A) Relatively long summers and drier winters
 - (B) Rise in the sea level and regional climatic changes
 - (C) Increased water levels in water bodies like lakes and streams but more consistent flooding patterns
 - (D) Increased water levels in lakes and streams and comparatively larger floodplains
60. Which one of the following non-biodegradable waste can pollute the earth to dangerous levels of toxicity, if not handled properly?
- (A) DDT
 - (B) CFC
 - (C) Radioactive substances
 - (D) PAN
61. What proportion of UV radiation from the sun normally absorbed by the atmospheric layer of ozone?
- (A) More than 99%
 - (B) around a quarter
 - (C) Less than 10%
 - (D) about half
62. Which of the following environment problems is not caused by human interference in the nitrogen cycle?
- (A) Ozone depletion in stratosphere
 - (B) Eutrophication
 - (C) Increased acid rain
 - (D) Increases global warming due to release of nitrous oxide
63. In order to address the problem of ozone depletion, the United Nations convened a meeting in 1987 in Canada. In that meeting, all the member nations agreed to reduce down the production and use CFC. What was the name of this agreement?
- (A) Kyoto Agreement
 - (B) Chemical Stewardship Program
 - (C) Montreal Protocol
 - (D) Vancouver Convention

- 64. Out of the below listed greenhouse gases, which one is entirely anthropogenic in origin?**
- (A) Carbon dioxide (B) Methane
(C) CFCs (D) Nitrous oxide
- 65. Among the given choices below, regarding the greenhouse effect which one is having least certainty?**
- (A) The heat energy in the atmosphere increases due to addition of greenhouse gases
(B) An increase in the number of tropical storms will be observed due to global warming
(C) Global warming will result in rising sea levels
(D) Various human activities are resulting into higher concentration of greenhouse gases
- 66. Which of the followings is non-biodegradable?**
- (A) Animal bones (B) Nylon
(C) Tea leaves (D) Wool
- 67. Which among the followings is not a major use of CFCs?**
- (A) Cleaning of computer parts
(B) Production of plastic foams
(C) Pressurizing agent in aerosol cans
(D) Buoyancy gas for blimps and balloons
- 68. Model predictions about global climate change indicates that:**
- (A) There are close agreement on trends and values (for example, predicted carbon dioxide concentration)
(B) No agreement at all
(C) There are close agreement on trends however; little agreement on values
(D) There is general agreement on trends but little agreement on values
- 69. Which of the following pollutants causes ozone holes in the ozone layer?**
- (A) CO₂ (B) SO₂
(C) CO (D) CFC

Answers

Sr.	Ans.								
1.	(C)	2.	(B)	3.	(D)	4.	(B)	5.	(C)
6.	(B)	7.	(C)	8.	(C)	9.	(C)	10.	(A)
11.	(C)	12.	(A)	13.	(A)	14.	(D)	15.	(D)
16.	(A)	17.	(A)	18.	(C)	19.	(C)	20.	(D)
21.	(A)	22.	(C)	23.	(D)	24.	(B)	25.	(D)
26.	(A)	27.	(C)	28.	(C)	29.	(C)	30.	(B)
31.	(D)	32.	(B)	33.	(A)	34.	(A)	35.	(A)
36.	(C)	37.	(A)	38.	(D)	39.	(A)	40.	(D)
41.	(A)	42.	(D)	43.	(A)	44.	(A)	45.	(D)
46.	(C)	47.	(B)	48.	(A)	49.	(A)	50.	(A)
51.	(B)	52.	(B)	53.	(B)	54.	(A)	55.	(C)
56.	(B)	57.	(C)	58.	(B)	59.	(B)	60.	(C)
61.	(A)	62.	(A)	63.	(C)	64.	(C)	65.	(B)
66.	(B)	67.	(D)	68.	(D)	69.	(D)		

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