

BIOLOGY NMDCAT EARLIER PREP

PMC UNIT WISE TEST Unit-3

TOPICS:

✓ Bioenergetics

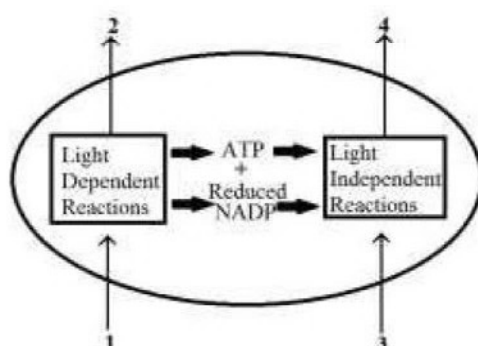
- Q.1** It is the quantitative study of energy relationship and energy conversions in biological systems:
 A. Thermodynamics B. Biochemistry
 C. Thermo-chemistry D. Bioenergetics
- Q.2** Actual source of oxygen produced during photosynthesis is:
 A. Carbon dioxide B. Water
 C. Glucose D. G3P
- Q.3** The incorrect statement for photosynthesis is:
 A. It occurs during day time B. It uses water
 C. It requires chlorophyll D. It uses Oxygen
- Q.4** All of the following are characteristics of head of chlorophyll except:
 A. Flat and square B. Light absorbing
 C. Contains magnesium D. Hydrophobic
- Q.5** A graph plotted showing absorption of different wavelengths of light by a pigment is called:
 A. Photosynthetic spectrum B. Absorption spectrum
 C. Pigment spectrum D. Action spectrum
- Q.6** All of the following functions are performed by carotenoids except:
 A. Broaden the absorption spectrum B. Protection of human eyes
 C. Protection of chlorophyll molecules D. Formation of ATP and NADPH
- Q.7** The main difference between PS-I and PS-II lies in their:
 A. Antenna complex B. Chlorophyll 'a'
 C. Reaction center D. Chlorophyll 'b'
- Q.8** It is not an accessory pigment of photosynthesis:
 A. Carotenes B. Chlorophyll 'b'
 C. Chlorophyll 'a' D. Xanthophylls
- Q.9** _____ is a kind of chemical linkage between catabolism and anabolism.
 A. NADH B. G3P
 C. FADH₂ D. ATP
- Q.10** In light independent stage of photosynthesis, CO₂ combines with its acceptor molecule, called _____ and form an unstable 6-carbon intermediate.
 A. Ribulose 1,5-bisphosphate B. NADPH
 C. Hexose sugar D. Glyceraldehyde 3-phosphate
- Q.11** All of the following contain a five carbon sugar except:
 A. RuBP B. FADH
 C. NAD⁺ D. Rubisco
- Q.12** The part of chlorophyll molecule which absorbs light is:
 A. Phytol B. Long hydrocarbon chain
 C. Porphyrin ring D. Hydrophobic tail
- Q.13** All of the following are produced during light reactions of photosynthesis except:
 A. ATP B. Glucose
 C. O₂ D. NADPH
- Q.14** Photosystem II is concerned with:
 A. Photolysis of water B. Formation of G3P
 C. Reduction of CO₂ D. Reduction of NADP⁺
- Q.15** The product of cyclic electron flow is:
 A. O₂ B. NADPH
 C. ATP D. FADH₂
- Q.16** The correct sequence of flow of electrons during light reaction of photosynthesis:
 A. Cytochrome complex → Plastoquinone → Plastocyanin
 B. Plastoquinone → Cytochrome complex → Plastocyanin
 C. Cytochrome complex → Plastocyanin → Plastoquinone

D. Plastoquinone → Plastocyanin → Cytochrome complex

Q.17 It acts as reducing agent during dark reactions of photosynthesis:

- A. ATP
B. H₂O
C. NADPH
D. G3P

Q.18 The diagram shows the movement of substances into and out of a chloroplast:



What do labels 1 to 4 represent?

	1	2	3	4
A.	CO ₂	ATP	H ₂ O	Starch
B.	CO ₂	H ₂ O	Sugars	O ₂
C.	H ₂ O	O ₂	CO ₂	Sugars
D.	Sugars	H ₂ O	ATP	O ₂

Q.19 _____ is the site of light independent reaction.

- A. Thylakoid space
B. Grana
C. Thylakoid membrane
D. Stroma

Q.20 Type of respiration which involves step by step breakdown of carbon chain molecules in the cell is called:

- A. External respiration
B. Pulmonary respiration
C. Cellular respiration
D. Organismic respiration

Q.21 The most common respiratory substrate used as a source of energy by the cells is:

- A. Glucose
B. Fructose
C. Sucrose
D. Insulin

Q.22 What is the net production of ATP molecules during anaerobic respiration?

- A. 0
B. 4
C. 2
D. 8

Q.23 What is the equation for aerobic respiration?

- A. Carbon dioxide + Water → Glucose + Oxygen + Energy
B. Oxygen + Glucose → Carbon dioxide + Alcohol + Energy
C. Carbon dioxide + Water → Alcohol + Oxygen + Energy
D. Glucose + Oxygen → Water + Carbon dioxide + Energy

Q.24 Which stage of cellular respiration will not be affected by absence or presence of oxygen?

- A. Glycolysis
B. Krebs cycle
C. Link reaction
D. Oxidative phosphorylation

Q.25 It is true about preparatory phase of glycolysis:

- A. ATP are consumed
B. NADH are consumed
C. ATP are produced
D. NAD⁺ are produced

Q.26 It splits into trioses during glycolysis:

- A. Fructose 4, 6-bisphosphate
B. Fructose 1, 3-bisphosphate
C. Glucose 6-phosphate
D. Fructose 1, 6-bisphosphate

Q.27 Which of the following is not related to the pyruvic acid oxidation?

- A. Decarboxylation
B. Addition of Co-A
C. Oxidation of NAD⁺
D. Oxidation of pyruvate

Q.28 During glycolysis, a water molecule is released when:

- A. BPG is converted into 3PG
C. 3PG is converted into 2 PG
B. 2PG is converted into PEP
D. PEP is formed pyruvate
- Q.29 In which step of Krebs cycle, decarboxylation does occur?**
A. Citrate to isocitrate formation
B. α -ketoglutarate to isocitrate formation
C. Fumarate to malate formation
D. Isocitrate to α -ketoglutarate formation
- Q.30 During Krebs cycle, conversion of succinate into fumarate give rise to:**
A. NADH
B. FADH_2
C. NADPH
D. ATP
- Q.31 Net production of ATP molecules in a prokaryotic cell when a glucose molecule is completely oxidized is:**
A. 34 ATP
B. 38 ATP
C. 36 ATP
D. 40 ATP
- Q.32 The chemical formula of lactic acid is:**
A. $\text{C}_3\text{H}_4\text{O}_3$
B. $\text{C}_2\text{H}_5\text{OH}$
C. $\text{C}_3\text{H}_6\text{O}_3$
D. $\text{C}_4\text{H}_8\text{O}_4$
- Q.33 During chemiosmosis, ATPs are formed when H^+ move:**
A. Actively from cytoplasmic matrix to inter membranous space
B. Actively from inter membranous space to cytoplasmic matrix
C. Passively from inter membranous space to mitochondrial matrix
D. Passively from mitochondrial matrix to inter membranous space
- Q.34 The water splitting step of photosynthesis is referred as:**
A. Phosphorylation
B. Plasmolysis
C. Photorespiration
D. Photolysis
- Q.35 Carriers of the respiratory chain are located on:**
A. Matrix of mitochondria
B. Inner membrane of mitochondria
C. Outer membrane of mitochondria
D. Cytoplasmic matrix
- Q.36 The source of oxygen during photosynthesis is:**
A. CO_2
B. G_3P
C. H_2O
D. H_2S
- Q.37 All are products of light reactions except:**
A. ATP
B. $\text{C}_6\text{H}_{12}\text{O}_6$
C. O_2
D. NADPH
- Q.38 Diversity among photosystems is due to:**
A. Carotenes
B. Chlorophyll 'b'
C. Chlorophyll 'a'
D. Xanthophylls
- Q.39 Ultimate source of energy for the formation of glucose through Calvin cycle is:**
A. NADH
B. NADPH_2
C. ATP
D. Solar energy
- Q.40 All of the following are involved in cyclic electron flow during light reaction except:**
A. Plastocyanin
B. Primary electron acceptor
C. Plastoquinone
D. Ferredoxin
- Q.41 How many ATPs are required for the operation of one Calvin cycle?**
A. 3
B. 6
C. 9
D. 18
- Q.42 Basic structure of all chlorophylls comprises:**
A. Cytochromes
B. Porphyrins
C. Flavoproteins
D. Plastocyanins
- Q.43 At the end of the respiratory chain, electrons, protons and oxygen combine to form:**
A. ATP
B. Water
C. CO_2
D. Pyruvate
- Q.44 The fixation of CO_2 in Calvin cycle requires which of the following acceptor molecule?**
A. Aldo-pentose
B. Keto-pentose
C. Aldo-triose
D. Keto-triose
- Q.45 Which is the correct order of energy transfer from accessory pigments to main photosynthetic pigment?**
A. Carotenoids \rightarrow chlorophyll a \rightarrow chlorophyll b
B. Chlorophyll a \rightarrow carotenoids \rightarrow chlorophyll b
C. Carotenoids \rightarrow chlorophyll b \rightarrow chlorophyll a

D. Chlorophyll b → carotenoids → chlorophyll a

Q.46 ATP consumption and production are associated with:

- A. Glycolysis
- B. Krebs cycle
- C. Electron transport chain
- D. Pyruvic acid oxidation

Q.47 Correct sequence of utilization of biomolecules for the production of energy in our body is:

- A. Carbohydrates → Lipids → Proteins
- B. Carbohydrates → Proteins → Lipids
- C. Lipids → Proteins → Carbohydrates
- D. Proteins → Lipids → Carbohydrates

Q.48 In oxidative phosphorylation, cytochrome a is oxidized by:

- A. Co enzyme Q
- B. Cytochrome 'b'
- C. Cytochrome 'a₃'
- D. Cytochrome 'c'

Q.49 Total number of CO₂ molecules released by oxidation of glucose through Krebs cycle:

- A. 2
- B. 3
- C. 4
- D. 6

Q.50 Which of the following correctly represents the end product (net) of glycolysis?

	ATP	NADH	H ₂ O
A.	4	4	4
B.	2	2	2
C.	4	2	4
D.	2	4	2

Q.51 All of the following are associated with light reaction except:

- A. Breakdown of water
- B. Fixation of CO₂
- C. Excitation of electrons
- D. Formation of NADPH

Q.52 A process that uses membranes to couple redox reactions to ATP synthesis is called:

- A. Osmosis
- B. Active transport
- C. Chemiosmosis
- D. Krebs cycle

Q.53 It structurally resembles with haeme portion of haemoglobin:

- A. Porphyrin
- B. Phytol
- C. Pyrrole
- D. Phytochrome

Q.54 Most common type of cellular respiration in our muscles is:

- A. Alcoholic fermentation
- B. Aerobic respiration
- C. Lactic acid fermentation
- D. Anaerobic respiration

Q.55 CO₂ in atmosphere remains relatively constant because:

- A. It is released during respiration and is used up in photosynthesis
- B. It is converted into carbohydrates during photosynthesis
- C. It is converted into CaCO₃
- D. Bacteria use extra CO₂ in atmosphere

Q.56 Photosystems occur in:

- A. Stroma
- B. Chloroplast envelope
- C. Grana
- D. Thylakoid interior space

Q.57 During Aerobic respiration, protons are diffused from:

- A. Matrix to inter-membranous space
- B. Inter-membranous space to matrix
- C. Stroma to thylakoid lumen
- D. Thylakoid lumen to stroma

Q.58 Dihydroxyacetone phosphate is an isomer of:

- A. RuP
- B. PGA
- C. G3P
- D. PEP

Q.59 Most efficient wavelength to carry out photosynthesis is of:

- A. Green colour
- B. Blue colour
- C. Red colour
- D. Orange colour

Q.60 At 500 nm, most of the light is absorbed by:

- A. Chlorophyll a
- B. Carotenoids
- C. Chlorophyll b
- D. Chlorophyll c

Q.61 Which of the following is intermediate in carbohydrates and fats metabolism?

- A. CO₂
- B. Acetyl Co-A
- C. Pyruvic acid
- D. G3P

Q.62 In Krebs cycle, the H atoms removed at succinate level, are accepted by:

- A. FAD
- B. ADP
- C. NADP
- D. NAD

Q.63 Number of which of the following is same in chlorophyll a and b?

- A. C and H
- B. C and O

- C. H and O
D. C and N
- Q.64 Increased level of ATP during aerobic respiration can inhibit the functioning of:**
A. Hexokinase
B. Pyruvate decarboxylase
C. Citrate synthase
D. Phosphofructokinase
- Q.65 Both respiration and photosynthesis require:**
A. Organic fuel
B. Sunlight
C. Cytochromes
D. C-C energy
- Q.66 Most of Krebs cycle's enzymes are located in/at**
A. Mitochondrial matrix
B. Cristae
C. Outer mitochondrial membrane
D. Inter-membranous space
- Q.67 Yeast cell respire through:**
A. Aerobically only
B. Both aerobically and anaerobically
C. Anaerobically only
D. In a unique way
- Q.68 Calvin cycle is commonly known as:**
A. C₃ pathway
B. C₄ pathway
C. Glucose pathway
D. Aerobic cycle
- Q.69 Stage till which aerobic respiration and fermentation are same:**
A. DAP formation
B. 3PG formation
C. Pyruvate formation
D. Acetyl CoA formation
- Q.70 Which one of these is a '5C' compound?**
A. Succinate
B. α -ketoglutarate
C. Citrate
D. Malate
- Q.71 The number of chloroplasts per square millimeter of leaf is about:**
A) Half million
C) Two million
B) One million
D) One billion
- Q.72 Unstacked thylakoid membranes are found in:**
A) Chloroplasts
C) Prokaryotes
B) Eukaryotes
D) Grana
- Q.73 Spectrophotometer is an instrument used to measure the relative abilities of different pigments to absorb:**
A) Different intensities of light
C) Different quantities of light
B) Different qualities of light
D) Different durations of light
- Q.74 Pigments absorb light of _____ nm wavelength:**
A) 300 – 700
C) 380 – 750
B) 350 – 750
D) 400 – 800
- Q.75 The enzymes related to glycolysis are:**
A) Attached to mitochondrial membrane
B) Attached to the cristae of mitochondria
C) Found dissolved in the nucleoplasm of the cell
D) Found dissolved in the cytoplasm of the cell
- Q.76 EXCEPT photosynthetic bacteria, all photoautotrophs contain:**
A) Chlorophyll b
C) Chlorophyll a
B) Chlorophyll c
D) Bacteriochlorophyll
- Q.77 Pick the molecular formula of chlorophyll b:**
A) C₅₅H₇₀O₆N₄Mg
C) C₅₅H₇₀O₅N₄Ca
B) C₅₅H₇₂O₅N₄Mg
D) C₅₅H₇₀O₅N₄K
- Q.78 Chlorophyll a is _____ while chlorophyll b is _____:**
A) Blue – Green, Yellow – Green
C) Violet – Green, Orange – Yellow
B) Yellow – Green, Blue – Green
D) Orange – Yellow, Violet – Green
- Q.79 Porphyrin ring of chlorophyll contains _____, whereas, that of hemoglobin contains _____:**
A) Magnesium, Iron
C) Potassium, Iron
B) Iron, Magnesium
D) Iron, Potassium
- Q.80 When equal intensities of light are given, there is more photosynthesis in _____ part of spectrum?**
A) Blue
C) Violet
B) Red
D) Green
- Q.81 Following are the components of antenna complex of photosystem, EXCEPT:**
A) Chlorophyll a
C) Carotenoids
B) Chlorophyll b
D) Reaction centre

- Q.82** _____ molecules of reaction center and associated proteins of photosystem are closely linked to the nearby electron transport system:
 A) Chlorophyll a C) Carotenes
 B) Chlorophyll b D) Xanthophylls
- Q.83** Atmospheric oxygen used in aerobic respiration is mainly replenished by that produced by:
 A) Electrolysis of water C) Photolysis of water
 B) Hydrolysis of water D) Hydrolysis of carbon dioxide
- Q.84** Photophosphorylation never results in the production of:
 A) NADPH C) ATP
 B) Oxygen D) Water
- Q.85** The ATP synthesis during the light reactions of photosynthesis is called:
 A) Oxidative phosphorylation C) Photophosphorylation
 B) Substrate level phosphorylation D) Glucose phosphorylation
- Q.86** Which part of chlorophyll molecule absorbs light?
 A) Phytol tail C) Pyrrole ring
 B) Porphyrin head D) Thylakoid membrane
- Q.87** Pick the correct sequence of non-cyclic electron flow during light reaction of photosynthesis:
 A) Cytochrome complex – plastoquinone – plastocyanin
 B) Plastoquinone – cytochrome complex – plastocyanin
 C) Plastocyanin – plastoquinone – cytochrome complex
 D) Plastocyanin – cytochrome complex – plastoquinone
- Q.88** Dark reactions of photosynthesis takes place in:
 A) Matrix C) Stroma
 B) Grana D) Thylakoid membrane
- Q.89** How many more molecules of ATP are used as compared to that of NADPH in one calvin cycle?
 A) Nine C) Three
 B) Six D) Nil
- Q.90** The process that uses membranes to couple redox reaction to ATP production is called:
 A) Phosphorylation C) Chemiosmosis
 B) Non-cyclic photophosphorylation D) Oxidation phosphorylation
- Q.91** Glycolysis is divided into following two phases, respectively:
 A) Oxidative phase, preparatory phase C) Carbon fixation phase, reduction phase
 B) Preparatory phase, Oxidative phase D) Reduction phase, carbon fixation phase
- Q.92** Most abundant protein on earth is:
 A) Ribulose C) Hemoglobin
 B) Rubisco D) Collagen
- Q.93** NADPH molecules are used in Calvin cycle during:
 A) Carbon fixation phase C) Regeneration phase
 B) Reduction phase D) Oxidation phase
- Q.94** Calvin cycle is also known as C3 pathway because:
 A) A three carbon compound is yielded
 B) Three molecules of CO₂ are fixed
 C) First stable compound is three carbon compound
 D) Three molecules of RuBP are used
- Q.95** In glycolysis PG is converted into PEP through:
 A) Hydration C) Oxidation
 B) Dehydration D) Reduction
- Q.96** At the end of Calvin cycle three molecules of RuBP are regenerated from:
 A) Four molecules of G3P C) Six molecules of G3P
 B) Three molecules of G3P D) Five molecules of G3P
- Q.97** How many ATP molecules are utilized during preparatory phase of glycolysis?
 A) 2 C) 6
 B) 4 D) 8
- Q.98** Every molecule of NADH, fed into electron transport chain, produces:
 A) 6 ATP molecules C) 4 ATP molecules
 B) 2 ATP molecules D) 3 ATP molecules

- Q.99 It involves complete breakdown of glucose molecule:**
 A) Alcoholic fermentation C) Aerobic respiration
 B) Lactic acid fermentation D) Anaerobic respiration
- Q.100 The terminal acceptor of electrons in ETC is:**
 A) Oxygen C) Cytochrome a₃
 B) Cytochrome a D) H₂O
- Q.101 Following metabolic pathways occur in the absence of oxygen, EXCEPT:**
 A) Lactic acid fermentation C) Respiratory chain
 B) Alcoholic fermentation D) Glycolysis
- Q.102 All the reactions of glycolysis take place in the:**
 A) Grana C) Cytosol
 B) Matrix D) Stroma
- Q.103 Alcoholic fermentation occurs in:**
 A) Animal cells C) Fungal cells
 B) Yeast cells D) Plant cells
- Q.104 The organelle that plays a role in transferring the energy of organic molecules into energy rich compounds like ATP is:**
 A) Chloroplast C) Endoplasmic reticulum
 B) Mitochondrion D) Golgi apparatus
- Q.105 The breaking of terminal phosphate of ATP releases about:**
 A) 7.3 cal energy C) 0.73 kcal energy
 B) 7.3 kcal energy D) 73.0 kcal energy
- Q.106 The stable six-carbon compound formed during Krebs cycle is:**
 A) Isocitrate C) Fumarate
 B) α-ketoglutarate D) Oxaloacetate
- Q.107 Which one is CO₂ acceptor?**
 A) Water C) CO₂
 B) Chlorophyll D) Rubisco
- Q.108 Glycolysis is the breakdown of:**
 A) Sugar C) Glycogen
 B) Starch D) Glucose
- Q.109 Citric acid cycle starts by the entry of:**
 A) Acetate C) Citrate
 B) Pyruvate D) Acetyl CoA
- Q.110 In Kreb's cycle decarboxylation is involved in conservation of:**
 A) Citrate to isocitrate formation C) α-ketoglutarate to succinate
 B) Malate to oxaloacetate formation D) Succinate to fumarate formation
- Q.111 In respiratory electron transport chain cytochrome-b is oxidized by:**
 A) Cytochrome – α C) Cytochrome – a₃
 B) Coenzyme Q D) Cytochrome – c
- Q.112 Synthesis of ATP via GTP in Krebs cycle is called:**
 A) Oxidative phosphorylation C) Substrate level phosphorylation
 B) Photophosphorylation D) Cyclic phosphorylation
- Q.113 The molecular mechanism of oxidative phosphorylation takes place in conjunction with respiratory chain in the:**
 A) Inner membrane of mitochondrion folded into cristae
 B) Outer membrane of mitochondrion folded into cristae
 C) Ground substance of mitochondrion called matrix
 D) Ground substance of mitochondrion called stroma
- Q.114 In the presence of ATP and reduced NADP provided by light dependent stage 3-phosphoglycerate is converted into:**
 A) 3 phosphoglyceraldehyde C) 1, 3 bisphosphoglycerate
 B) 1, 3 bisphosphoglyceraldehyde D) Glyceraldehyde 1, 3 bisphosphate
- Q.115 _____ is activated by an activation of phosphofructokinase due to deficiency of citrate:**
 A) Rubisco C) ATP
 B) Coenzyme A D) Glycolysis
- Q.116 Photosystem 'I' has chlorophyll 'a' molecule which absorb maximum light of:**
 A) 680 nm C) 700 nm
 B) 780 nm D) 580 nm
- Q.117 Which one of the following is not an iron containing electron carrier?**
 A) Ferredoxin C) Plastoquinone

- B) Plastocyanin
D) Cytochrome
- Q.118** Number of ATP molecules produced during glycolysis of one glucose molecule is:
A) 2
B) 4
C) 6
D) 8
- Q.119** Both alcoholic and lactic acid fermentation yields _____% of the energy present within the chemical bonds of glucose:
A) 1
B) 2
C) 10
D) 20
- Q.120** Succinate is converted into fumarate by:
A) NAD-mediated oxidation
B) FAD-mediated oxidation
C) NADH-mediated reduction
D) FADH-mediated reduction
- Q.121** Xanthophylls absorb light of:
A) Yellow – orange range
B) Yellow – red range
C) Violet – indigo range
D) Blue – green range
- Q.122** It is found along with chlorophyll a in all green plants and green algae:
A) Chlorophyll b
B) Chlorophyll c
C) Chlorophyll d
D) Phycobilins
- Q.123** Which one of the following is not a sugar?
A) Rubisco
B) RuBP
C) G3P
D) DAP
- Q.124** Graph showing relative effectiveness of different wavelengths of light in driving photosynthesis is called:
A) Action spectrum
B) Absorption spectrum
C) Emission spectrum
D) Photospectrum
- Q.125** Reaction center of photosystem II absorbs best light of:
A) 700 nm
B) 680 nm
C) 730 nm
D) 660 nm
- Q.126** Pyrrole rings are composed of:
A) Carbon atoms
B) Nitrogen atoms
C) Carbon and nitrogen atoms
D) Magnesium atoms
- Q.127** Molecular formula of chlorophyll a is:
A) $C_{55}H_{72}O_5N_4Mg$
B) $C_{55}H_{70}O_6N_4Mg$
C) $C_{35}H_{30}O_5N_4Mg$
D) $C_{54}H_{70}O_6N_4Mg$
- Q.128** Which of the following is not an accessory pigment of photosynthesis?
A) Chlorophyll a
B) Chlorophyll b
C) Carotenes
D) Xanthophylls
- Q.129** Light reaction of photosynthesis occurs in:
A) Grana
B) Stroma
C) Matrix
D) Cristae
- Q.130** The folds of inner membrane of mitochondria are called:
A) Cisternae
B) Cristae
C) Thylakoids
D) Grana
- Q.131** It provides energized electrons and H^+ to a cell:
A) ATP
B) Assimilatory power
C) $NADPH_2$
D) ADP
- Q.132** Photosynthetic pigments are organized into clusters, called:
A) Antenna complex
B) Reaction center
C) Photosystem
D) Thylakoid
- Q.133** In dark reaction _____ is oxidized:
A) 1, 3 BPG
B) NAPH
C) G3P
D) NADH
- Q.134** Which of the following is copper containing electron carrier?
A) Pq
B) Pc
C) FAD
D) Fd
- Q.135** In glycolysis, glycerate 1,3-bisphosphate is converted into glycerate-3-phosphate by losing _____ phosphate molecules:
A) 3
B) 2
C) 1
D) 4
- Q.136** The number of electrons required to reduce $NADP^+$ is:
A) One
B) Two
C) Three
D) Four

- Q.137 Oxidative phase of glycolysis starts with reduction of:**
 A) Glucose
 B) Fructose 6-phosphate
 C) Glyceraldehyde 3-phosphate
 D) NADH
- Q.138 In Kreb's cycle Acetyl Co. A is condensed with:**
 A) Oxaloacetate
 B) Citrate
 C) Malate
 D) Fumarate
- Q.139 Phosphorylation of glucose starts the:**
 A) Krebs cycle
 B) Preparatory phase of glycolysis
 C) Oxidative phase of glycolysis
 D) Calvin cycle
- Q.140 It ends with the formation of pyruvate:**
 A) Preparatory phase of glycolysis
 B) Oxidative phase of glycolysis
 C) Tricarboxylic acid cycle
 D) Electron transport chain
- Q.141 Pick up the first stable compound of Calvin cycle:**
 A) A six carbon compound
 B) 3 Phosphoglycerate
 C) 1, 3 Bisphosphoglycerate
 D) Glyceraldehyde 3 phosphate
- Q.142 Pick up the end product of anaerobic respiration that occurs in human muscles:**
 A) Lactic acid
 B) Pyruvic acid
 C) Citric acid
 D) Malic acid
- Q.143 The number of CO₂, NADPH₂ and ATP molecules required to synthesize one glucose molecule from the output of C₃ pathway is respectively:**
 A) 6, 12, 18
 B) 3, 6, 9
 C) 24, 48, 72
 D) 12, 24, 36
- Q.144 Photosynthetic pigments are organized into clusters called:**
 A) Photosystem
 B) Antenna complex
 C) Reaction center
 D) Stroma
- Q.145 How many electrons are excited from one photon of light?**
 A) 1
 B) 2
 C) 3
 D) 4
- Q.146 Rubisco is found in:**
 A) Grana
 B) Stroma
 C) Matrix
 D) Cytoplasm
- Q.147 Pick up a common stage of aerobic and anaerobic respiration:**
 A) Glycolysis
 B) Krebs cycle
 C) ETC
 D) Calvin cycle
- Q.148 Total NADH formed by one glucose in Krebs cycle are:**
 A) 3
 B) 6
 C) 18
 D) 8
- Q.149 It yields relatively small amounts of energy from glucose molecule:**
 A) Alcoholic fermentation
 B) Aerobic respiration
 C) Anaerobic respiration
 D) Lactic acid fermentation
- Q.150 ATPs are produced in following steps of glycolysis:**
 A) Step # 6 and 7
 B) Step # 7 and 8
 C) Step # 7 and 9
 D) Step # 7 and 10
- Q.151 In respiratory chain oxygen is reduced by:**
 A) Cytochrome a₃
 B) Cytochrome b
 C) Cytochrome c
 D) Cytochrome a
- Q.152 During oxidative phosphorylation one FADH₂ yields:**
 A) 1 ATP
 B) 2 ATPs
 C) 3 ATPs
 D) 5 ATPs
- Q.153 _____ are phosphorylated in preparatory phase of glycolysis:**
 A) Hexoses
 B) Pentoses
 C) Trioses
 D) Tetroses
- Q.154 A hexose is broken down into two trioses in:**
 A) 4th phase of glycolysis
 B) 5th phase of glycolysis
 C) 6th phase of glycolysis
 D) 7th phase of glycolysis
- Q.155 Cyclic phosphorylation yields:**
 A) An ATP and Oxygen
 B) ATP, NADPH and Oxygen
 C) 2 ATPs and 3 NADPH₂
 D) An ATP molecule only
- Q.156 First step of Krebs cycle is:**
 A) Formation of acetyl CoA
 B) Formation of citrate
 C) Formation of isocitrate
 D) Formation of fumarate

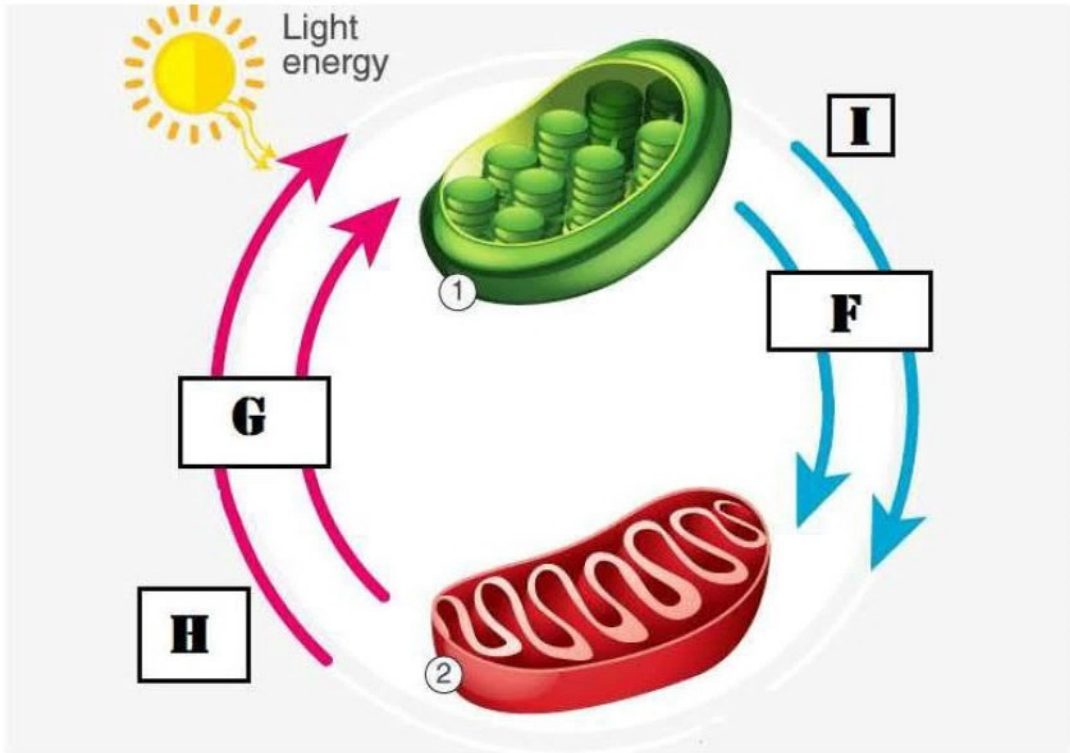
- Q.157** Total NADH formed during one Calvin cycle is/are:
 A) Zero C) 02
 B) 01 D) 03
- Q.158** The similarity between cytochromes and hemoglobin is that of:
 A) Electron carrying capacity C) Relation with cellular respiration
 B) Haem group D) Oxygen carrying capacity
- Q.159** How many molecules of water are used in a Krebs cycle?
 A) One C) Three
 B) Two D) Four
- Q.160** Pick up the most electronegative substance in respiratory electron transport chain:
 A) Coenzyme – Q C) Cytochrome – a₃
 B) Cytochrome – c D) Oxygen
- Q.161** Which one of the following does not occur in glycolysis?
 A) Phosphorylation of glucose C) Dehydration
 B) Decarboxylation D) Substrate level phosphorylation
- Q.162** It acts as an electron donor during light reaction of photosynthesis:
 A) CO₂ C) C₆H₁₂O₆
 B) H₂O D) NAD⁺
- Q.163** Following are the components of reaction centre, EXCEPT:
 A) Chlorophyll a C) Associated electron carriers
 B) Primary electron acceptor D) Chlorophyll b
- Q.164** How many CO₂ molecules are released when one molecule of glucose is completely broken down in aerobic respiration?
 A) 3 C) 9
 B) 6 D) 18
- Q.165** How many pyrroles are present in porphyrin ring of chlorophyll?
 A) 2 C) 6
 B) 4 D) 8
- Q.166** A chemical reaction in which one molecule loses electrons, while another molecule simultaneously gains electrons is called:
 A) Oxidation reduction reaction C) Reduction reaction
 B) Oxidation reaction D) Decarboxylation reaction
- Q.167** It is also known as C₃ pathway:
 A) Calvin cycle C) ETC
 B) Krebs cycle D) Glycolysis
- Q.168** The tail of chlorophyll molecule is embedded in:
 A) Membrane of mitochondria
 B) Thylakoid membrane
 C) Membrane of smooth endoplasmic reticulum
 D) Membrane of rough endoplasmic reticulum
- Q.169** The ATP molecule is not used by cell as a source of energy in:
 A) Muscular contraction C) Passive transport
 B) Active transport D) Nerve conduction
- Q.170** Decarboxylation occurs during following steps, EXCEPT:
 A) Conversion of succinate into fumarate
 B) Conversion of isocitrate into α-ketoglutarate
 C) Conversion of α-ketoglutarate into succinate
 D) Conversion of pyruvate into acetyl CoA
- Q.171** Photosystem I has chlorophyll 'a' molecules which absorb maximum light of:
 A) 680 nm B) 780 nm
 C) 700 nm D) 580 nm
- Q.172** Which is a terminal acceptor of electron in ETC?
 A) Oxygen B) Cytochrome a
 C) Cytochrome a₃ D) Water
- Q.173** Graph which shows effectiveness of absorbed light is called:
 A) Emission spectrum B) Effective spectrum
 C) Absorption spectrum D) Action spectrum
- Q.174** _____ is the site of light independent reaction:
 A) Thylakoid membrane B) Thylakoid space
 C) Stroma D) Grana

- Q.175 The product (s) of cyclic photophosphorylation is/are:**
 A) ATP
 B) NADP
 C) NADP and ATP
 D) NADP, ATP and O₂
- Q.176 End product of glycolysis is:**
 A) 4 ATP, Pyruvate
 B) 3NADH₂, 4ATP, Pyruvate
 C) 2ATP, 3NADH₂
 D) Pyruvate, 2ATP, 2 FADH₂
- Q.177 Total NADH formed by one glucose molecule during Krebs cycle are:**
 A) 6
 B) 3
 C) 8
 D) 18
- Q.178 It is found in eukaryotic photosynthetic plants and algae, EXCEPT in photosynthetic bacteria:**
 A) Chlorophyll b
 B) Bacteriochlorophyll
 C) Carotenoids
 D) Chlorophyll a
- Q.179 For synthesis of sugar in the Calvin cycle assimilating power is provided by a molecule of:**
 A) NADH
 B) ATP
 C) NADPH
 D) NADP
- Q.180 Calvin cycle is also called as C3 pathway because:**
 A) The output is three carbon compounds
 B) First stable compound is three carbon compounds
 C) Three molecules of CO₂ are fixed
 D) Three molecules of RuBP are used
- Q.181 Acceptor of acetyl CoA in Krebs cycle is:**
 A) Oxaloacetate
 B) Citrate
 C) Succinate
 D) Fumarate
- Q.182 Carotenoids are:**
 A) Violet and indigo to blue
 B) Indigo and blue to green
 C) Orange and yellow to green
 D) Yellow and red to orange
- Q.183 The copper containing electron carrier in photosynthetic electron transport chain is:**
 A) Pq
 B) Pc
 C) Cyt b
 D) Fd
- Q.184 It refers to the initial incorporation of CO₂ into organic material:**
 A) Reduction of CO₂
 B) Fixation of CO₂
 C) Regeneration of CO₂ acceptor
 D) Regeneration of RuBP
- Q.185 The number of ATP molecules required to synthesize one glucose molecule from the output of C3 pathway is:**
 A) 9
 B) 18
 C) 36
 D) 72
- Q.186 First action spectrum was obtained by working on:**
 A) Spirogyra
 B) Ulva
 C) Rose
 D) Marchantia
- Q.187 Chlorophylls absorb mainly:**
 A) Violet — blue and orange — yellow
 B) Blue — orange and yellow — green
 C) Orange — red and green — yellow
 D) Violet — blue and orange — red
- Q.188 The synthesis of ATP with the help of light energy in light dependent phase of photosynthesis is called:**
 A) Substrate level of phosphorylation
 B) Oxidative phosphorylation
 C) Cyclic phosphorylation
 D) Photophosphorylation
- Q.189 Light independent reactions can be divided into:**
 A) Two phases
 B) Three phases
 C) Four phases
 D) Five phases
- Q.190 The most abundant protein in chloroplast is:**
 A) Rubisco -1,5-bisphosphate carboxylase
 B) Ribulose-I,5-bisphosphate oxygenase
 C) Rubisco
 D) Ribulose bisphosphate
- Q.191 Phytol tail is composed of:**
 A) Carbon and hydrogen atoms
 B) Nitrogen and hydrogen atoms
 C) Carbon and nitrogen atoms
 D) Nitrogen and oxygen atoms

- Q.192** _____ provides energized electrons:
 A) ATP
 B) Assimilatory power
 C) NADPH₂
 D) CO₂
- Q.193** The output of a single Calvin cycle is a:
 A) G3P
 B) RuBP
 C) 3-PGA
 D) Starch
- Q.194** The most common fuel used by the cell to provide energy by respiration is:
 A) G3P
 B) Glucose
 C) Sucrose
 D) Pyruvate
- Q.195** It is the process by which energy is made available to cells in a step-by-step breakdown of C-chain molecules in the cells:
 A) External respiration
 B) Internal respiration
 C) Cellular respiration
 D) Fermentation
- Q.196** Pyruvate, the end product of glycolysis, follows different catabolic pathways depending on:
 A) Size of the organism
 B) Availability of ATP
 C) The organism and metabolic conditions
 D) Availability of the CO₂
- Q.197** Lactic acid fermentation occurs in:
 A) Yeast cells
 B) Human muscle cells
 C) Fungal cells
 D) Eukaryotic cells
- Q.198** _____ play a part in cellular respiration by transferring the energy of the organic molecules to the chemical bonds of ATP:
 A) Chloroplast
 B) Mitochondria
 C) Endoplasmic reticulum
 D) Golgi apparatus
- Q.199** Phosphorylation of glucose by ATP takes place in the:
 A) First step of glycolysis
 B) Fifth step of glycolysis
 C) Seventh of glycolysis
 D) Ninth step of glycolysis
- Q.200** Krebs cycle begins when a 2C unit from acetyl Co-A reacts with 4C molecule (oxaloacetate) to produce:
 A) Malate
 B) α-ketoglutarate
 C) Citrate
 D) Succinyl Co-A
- Q.201** In respiratory electron transport chain cytochrome-b is reduced by:
 A) NADH
 B) FADH
 C) Cytochrome -C
 D) Coenzyme -Q
- Q.202** The molecular mechanism of oxidative phosphorylation takes place in conjunction with respiratory chain in the:
 A) Outer membrane of mitochondrion
 B) Matrix of mitochondrion
 C) Cristae of mitochondrion
 D) Inner membrane of mitochondrion
- Q.203** The ATP molecule is used by cell as a source of energy for various functions, EXCEPT:
 A) Active transport across the cell membrane
 B) Muscular contraction
 C) Nerve conduction
 D) Diffusion
- Q.204** Synthesis of ATP in the presence of oxygen is called:
 A) Cyclic phosphorylation
 B) Photophosphorylation
 C) Oxidative phosphorylation
 D) Non — cyclic phosphorylation
- Q.205** The breaking or terminal phosphate of ATP releases about _____ energy
 A) 0.73 kcal
 B) 7.3 cal
 C) 73.0 kcal
 D) 7.3 kcal
- Q.206** At the end of Calvin cycle three of five carbon RuBP are regenerated from:
 A) Three molecules of G3P
 C) Five molecules of G3P
 B) Four molecules of G3P
 D) Six molecules of G3P
- Q.207** Photosynthesis is a/an:
 A) Catabolic process
 B) Oxidation process
 C) Reduction process
 D) Redox process
- Q.208** All of the following are correct with respect to Calvin cycle of photosynthesis, EXCEPT:
 A) It involves reduction of carbon dioxide
 B) It is formation of carbohydrates
 C) It may occur in light as well
 D) It requires darkness

- Q.209 In glycolysis 2 PG is converted into PEP by:**
 A) Oxidation B) Hydration
 C) Dehydration D) Reduction
- Q.210 The step(s) of glycolysis which yields ATP is/are:**
 A) Step # 7 and 2 B) step # and 3
 C) Step # 7 and 10 D) step # 1 and 3
- Q.211 Enzyme succinate dehydrogenase convert succinate into:**
 A) Fumarate B) Malonic acid
 C) Citrate D) Malate
- Q.212 In light independent stage of photosynthesis, the CO₂ combines with_____ to form an unstable 6-carbon intermediate.**
 A) Glyceraldehyde-9-phosphate B) Hexose sugar
 C) Glycerate-3-phosphate D) Ribulose bisphosphate
- Q.213 In chemiosmosis the proton (H⁺) pumps move from:**
 A) Stroma to lumen B) Stroma to cytoplasm
 C) Lumen to stroma D) Cytoplasm to stroma
- Q.214 Which of the following color is maximum absorbed by chlorophyll?**
 A) Red B) Green
 C) Yellow D) Indigo
- Q.215 Which one of the following involves single photosystem?**
 A) Non-cyclic phosphorylation B) Oxidative phosphorylation
 C) Photophosphorylation D) Cyclic phosphorylation
- Q.216 Total FADH formed by one glucose in Krebs cycle?**
 A) 2 B) 4
 C) 6 D) 8
- Q.217 Which part of chlorophyll molecule absorbs light?**
 A) Phytol B) Porphyrin ring
 C) Pyrrole D) Thylakoid membrane
- Q.218 Every molecule of NADH fed into electron transport chain produces:**
 A) 6 ATP B) 2 ATP
 C) 4 ATP D) 3 ATP
- Q.219 Which one is correctly matched with tail of chlorophyll?**
 A) Hydrophilic B) Hydrophobic
 C) Light absorbing D) Porphyrin ring
- Q.220 Succinate is converted into malate by:**
 A) NAD-mediated oxidation B) FAD-mediated oxidation
 C) NADH-mediated reduction D) FADH-mediated reduction
- Q.221 In the process of photosynthesis, the right sequences regarding the flow of electrons are:**
 I. H₂O ⇒ NADPH ⇒ Calvin cycle
 II. NADPH ⇒ electron transport chain ⇒ O₂
 III. H₂O ⇒ photosystem I ⇒ photosystem II
 IV. NADPH ⇒ chlorophyll ⇒ Calvin cycle
 A) I only B) II only
 C) III only D) I, II, III & IV
- Q.222 Glycolysis provides a cell with a:**
 A) Net gain of 02 ATP molecules B) Net gain of 4 ATP molecules
 C) Net gain of 18 ATP molecules D) Net gain of 36 ATP molecules
- Q.223 Both NADH and FADH are produced during:**
 I. Electron transport system II. Citric acid cycle
 III. Glycolysis IV. Fermentation
 A) I only B) II only
 C) III only D) I, II, III and IV
- Q.224 The products of Calvin cycle are:**
 A) Glucose, ADP, NADP⁺, CO₂ B) ATP, NADPH, O₂
 C) Glucose, ADP, NADP⁺ D) ADP, NADP⁺, O₂
- Q.225 _____splits water.**
 A) PS-II B) PS-I
 C) ATP synthase complex D) None of these

Q.226 Observe the below diagram, and find the answer accordingly.



Option	F	G	H	I
A.	Water & Glucose	Oxygen & CO ₂	Cellular respiration	Photosynthesis
B.	Oxygen & CO ₂	Water & Glucose	Photosynthesis	Cellular respiration
C.	Oxygen & Glucose	Water & CO ₂	Cellular respiration	Photosynthesis
D.	Water & CO ₂	Oxygen & Glucose	Photosynthesis	Cellular respiration

Q.227 5 molecules of _____ are required to produce 3 molecules of _____.

- A) G3P; PGA
- B) G3P; RuBP
- C) PGA; G3P
- D) RuBP; G3P

Q.228 The electron vacancies in P are filled by electrons:

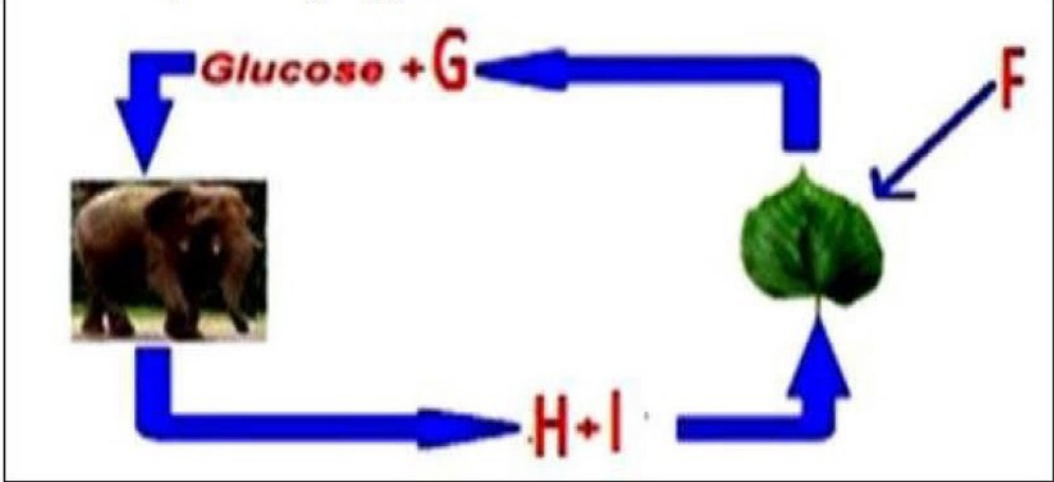
- A) Derived from C₆H₁₂O₆
- B) Derived from CO₂
- C) Derived from H₂O
- D) Derived from O₂

Q.229 Find the right row of answers about light reaction of photosynthesis accordingly.

Energized electrons from F are used to G .

Option	F	G
A.	Photosystem I	Reduce NADPH
B.	Photosystem II	Reduce NADP ⁺
C.	Photosystem I	Reduce NADP ⁺
D.	Photosystem I	Oxidize NADP ⁺

Q.230 The letter representing oxygen is



- A) Letter-F
- B) Letter-G
- C) Letter-H
- D) Letter-I

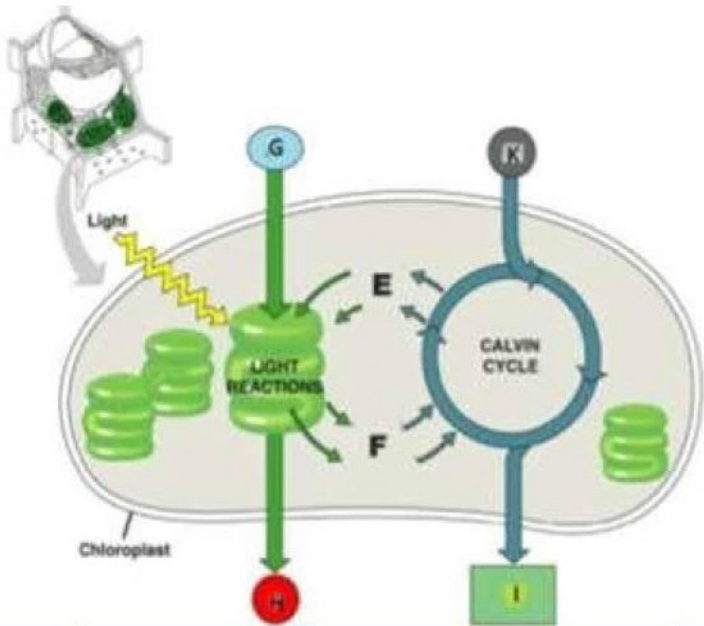
Q.231 Find the right row of answers about light dependent reaction of photosynthesis accordingly.

Option	Produces	Uses
A)	CO ₂	Water
B)	Water	NADPH
C)	C ₆ H ₁₂ O ₆	CO ₂
D)	NADPH	Water

Q.232 In Calvin cycle, what is the product of reaction catalyzed by Rubisco?

- A) 3-Phosphoglycerat
- B) G3P
- C) RuBP
- D) Sucrose

Q.233 Observe the below diagram about photosynthesis and find the right row of answers accordingly



Option	G	E	K
A)	CO ₂	NADPH, ATP	C ₆ H ₁₂ O ₆
B)	C ₆ H ₁₂ O ₆	NADPH, ATP	CO ₂
C)	H ₂ O	NADP ⁺ , ADP + p	CO ₂
D)	CO ₂	NADP ⁺ , ADP + p	H ₂ O

Q.234 Find the correct order of Calvin cycle.

1. Reduction
2. Regeneration
3. Carbon fixation
- A) 2 ⇒ 3 ⇒ 1
- B) 3 ⇒ 1 ⇒ 2
- C) 3 ⇒ 2 ⇒ 1
- D) 1 ⇒ 1 ⇒ 3

Q.235 Electron carriers between P and p consist of:

- I. Plastocyanin
- II. Ferredoxin
- III. Plastoquinone
- A) I only
- B) I and II
- C) I and III
- D) I, II and III

Q.236 Photosynthesis is same in both C4 and CAM plants, as in both

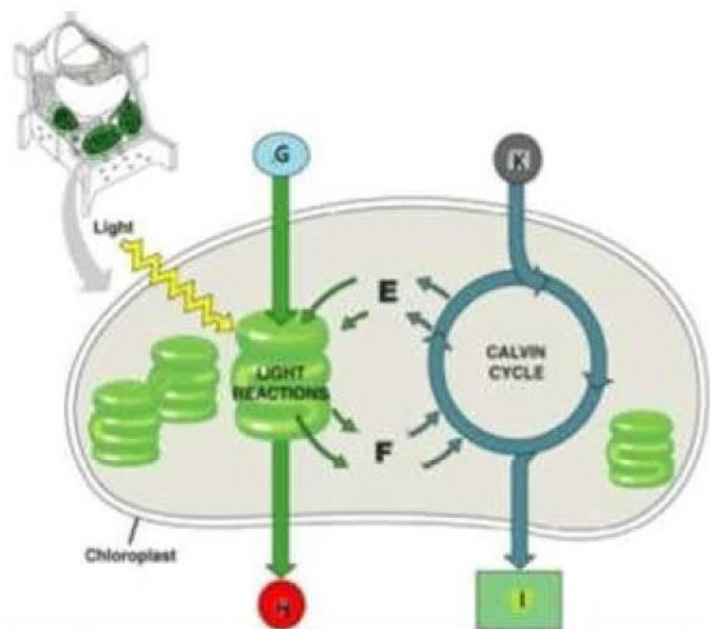
- I. Rubisco is not used to fix CO₂ in the start.
- II. PS-I is used only.
- III. Calvin cycle is absent.

- A) I only
- B) II only
- C) III only
- D) II and III

Q.237 phosphorylates ADP to make ATP.

- A) PS-II
- B) PS-I
- C) ATP synthase complex
- D) None of these

Q.238 Observe the below diagram about photosynthesis and find the right row of answers accordingly



Option	H	F	I
A)	O ₂	NADPH, ATP	C ₆ H ₁₂ O ₆
B)	C ₆ H ₁₂ O ₆	NADPH, ATP	O ₂
C)	H ₂ O	NADP ⁺ , ADP + p	CO ₂
D)	CO ₂	NADP ⁺ , ADP + p	H ₂ O

Q.239 All of the following occur in Calvin cycle except:

- I. Regeneration of CO₂ acceptor
- II. Oxidation of NADPH
- III. Release of oxygen

- A) I only
- B) II only
- C) III only
- D) II and III

Q.240 The products of linear photophosphorylation are:

- A) CO₂ and H₂O
- B) O₂ and C₆H₁₂O₆
- C) ATP and NADPH
- D) ADP and NADP

Q.241 When oxygen is released as a result of photosynthesis, it is a:

- A) Direct by-product of photosynthesis of water molecule
- B) Direct by-product of reduction of NADP
- C) Direct by-product of splitting of water molecule
- D) Direct by-product of reduction of CO₂

Q.242 Find the right row of answers about photosynthesis according

Option	Dark Reaction	Light Reaction
A.	Light energy into chemical energy	Oxidation Of CO ₂ into Glucose
B.	Oxidation Of CO ₂ into Glucose	Light energy into chemical energy
C.	Light energy into chemical energy	Reduction of CO ₂ into Glucose
D.	Reduction of CO ₂ into Glucose	Light energy is converted into chemical energy

Q.243 The common process to both aerobic and anaerobic oxidation of sugar is:

- A) Oxidation of pyruvic acid to CO₂
- B) Chemiosmosis in mitochondria
- C) Glycolysis
- D) Krebs cycle

Q.244 Glycolysis occurs at:

- A) Cytoplasm
- B) Cristae
- C) Stroma
- D) Matrix

Q.245 The process that produces both NADH and FADH₂ is:

- A) Electron transport system
- B) Glycolysis
- C) TCA cycle
- D) Fermentation

Q.246 The first reaction in the citric acid cycle is binding W to X.

Option	W	X
A.	Carbon dioxide	C5 molecule
B.	Acetyl CoA	C4 molecule
C.	Carbon dioxide	C3 molecule
D.	Acetyl CoA	C3 molecule

Q.247 During the link reaction, _____ diffuses from cytoplasmic fluid into _____.

- A) Oxygen; Cytosol
B) Glucose; Cytosol
C) Acetyl Co-A; Mitochondria
D) Pyruvic acid; Mitochondria

Q.248 Find the odd one out regarding the products of Krebs cycle.

- A) CO₂
B) ATP
C) Pyruvic acid
D) FADH₂

Q.249 Which process reduces molecular oxygen to water?

- A) Citric acid cycle
B) Glycolysis
C) Electron transport system
D) Fermentation

Q.250 Which one of the following options indicates 3 carbon compounds?

- A) Pyruvic acid
B) Oxaloacetate
C) Succinyl CoA
D) None of these

Q.251 Match correctly and find the right choice.

i.	Calvin cycle	a.	Cytosol
ii.	Tricarboxylic acid cycle	b.	Stroma
iii.	Glycolysis	c.	Thylakoid membrane
iv.	ETC	d.	Matrix

- A. i=b, ii=d, iii=c, iv=a
B. i=d, ii=b, iii=a, iv=c
C. i=b, ii=d, iii=a, iv=c
D. i=d, ii=b, iii=c, iv=a

Q.252 In glycolysis, the ATP formation occurs during:

- A) Glucose ⇒ Glucose 6-phosphate
B) Phosphoenol pyruvate ⇒ Pyruvate
C) Fructose 6-phosphate ⇒ Fructose I, 6-Bisphosphate
D) A and C

Q.253 All of the following are the products of glycolysis

- A) H₂O
B) ATP
C) FADH₂
D) None, as all of these are products of glycolysis

Q.254 How many ATP molecule(s) is/are produced during Krebs cycle by substrate level phosphorylation?

- A) 1 molecule
B) 2 molecules
C) 3 molecules
D) 4 molecules

Q.255 Glycolysis and TCA cycle are linked by:

- A) Pyruvic acid
B) Acetyl coenzyme A
C) ATP
D) CO₂

Q.256 How many FADH₂ molecules are produced during glycolysis and link reaction?

- A) 1 molecule
B) 2 molecules
C) 3 molecules
D) No molecule

Q.257 In cellular respiration, oxygen plays the role as:

- A) Primary electron acceptor
B) Primary electron donor
C) Final electron acceptor
D) By-product

Q.258 In glycolysis, ATP molecules are formed by:

- A) Oxidative phosphorylation
B) Chemiosmosis
C) Substrate level phosphorylation
D) Deamination

Q.259 How many CO₂ are fixed during one Calvin cycle?

- A) 2
B) 3
C) 1
D) 5

Q.260 Glycolysis in a prokaryotic cell occurs in:

- A) Mitochondria
B) Chloroplast
C) Cytosol
D) Nucleus

- Q.261 It acts as CO₂ acceptor during photosynthesis:**
 A) RuBP B) Rubisco
 C) Oxaloacetate D) Citrate
- Q.262 Chlorophyll molecules can be structurally related to:**
 A) Monopyrrole B) Dipyrrole
 C) Tripyrrole D) Tetrapyrrole
- Q.263 Ferridoxin is an electron carrier that contains _____ as central metal ion.**
 A) Magnesium B) Zinc
 C) Iron D) Copper
- Q.264 Photosynthetic pigments in chloroplast are embedded in:**
 A) Thylakoid membrane of grana B) Thylakoid membrane of inter-grana
 C) Matrix of chloroplast D) Envelope of chloroplast
- Q.265 It is non-polar part of chlorophyll:**
 A) Phytol B) Porphyrin
 C) Pyrrole D) Antenna
- Q.266 Chlorophyll molecule in PS-II when excited, the released electron are first accepted by:**
 A) Pq B) Pc
 C) Fd D) PEA
- Q.267 It is the source of oxygen evolved during photosynthesis:**
 A) Water B) Carbon dioxide
 C) Glucose D) ATP
- Q.268 These represent product/s of cyclic photophosphorylation:**
 A) ATP B) NADP and ATP
 C) NADH₂ and O₂ D) ATP and O₂
- Q.269 A function that is associated with Photosystem-II is:**
 A) Photolysis of water B) Reduction of CO₂
 C) Formation of glucose D) Formation of NADPH
- Q.270 Photosynthesis in higher plants is carried out by:**
 A) Chl a, Chl b, anthocyanins B) Chl a, Chl b, fucoxanthine
 C) Chl a, Chl b, carotenoid D) Chl a, Chl b, phycobilins
- Q.271 Chlorophyll 'a' has highest peaks at:**
 A) 400 and 500 nm B) 430 and 730 nm
 C) 430 and 660 nm D) 400 and 660 nm
- Q.272 In photosynthesis, light is directly required for:**
 A) Electron excitation B) Reduction of CO₂
 C) Formation of photosystem D) Pumping of electrons
- Q.273 First unstable product of Calvin cycle has:**
 A) 2 carbon atoms B) 3 carbon atoms
 C) 4 carbon atoms D) 6 carbon atoms
- Q.274 Dark reaction of photosynthesis is called so because:**
 A) It can only occur in dark B) It does not require light energy
 C) It requires low light intensity D) It occurs more rapidly in night
- Q.275 A reaction that is associated with Calvin cycle:**
 A) Photophosphorylation B) Oxidative carboxylation
 C) Reductive carboxylation D) Oxidative phosphorylation
- Q.276 Pyruvate dehydrogenase is an enzyme that converts:**
 A) Pyruvate to glucose B) Pyruvic acid to lactic acid
 C) Glucose to pyruvate D) Pyruvate to acetyl CoA
- Q.277 It is representation of process of glycolysis:**
 A) $C_6H_{12}O_6 - 2C_3H_4O_3 + 4H^+$ B) $C_6H_{12}O_6 + 6CO_2 - 6CO_2 + 6H_2O$
 C) $6H_2O + 6CO_2 - C_6H_{12}O_6 + 6CO_2$ D) $C_6H_{12}O_6 - 2C_3H_4O_3 + 2CO_2$
- Q.278 First step of glycolysis is:**
 A) Breakdown of glucose B) Phosphorylation of glucose
 C) Conversion of glucose into fructose D) Dehydrogenation of glucose
- Q.279 All of the following are true about glycolysis except:**
 A) Breakdown of glycogen B) Substrate level phosphorylation
 C) Production of ATP D) Expenditure of ATP

- Q.280 During Krebs cycle, malate gives its hydrogen to:**
 A) FAD B) FADH₂
 C) NAD⁺ D) NADP⁺
- Q.281 Krebs cycle is termed as the aerobic phase of respiration because:**
 A) It consumes oxygen B) It produces oxygen
 C) It works with ETC D) It occurs inside mitochondria
- Q.282 GTP is formed during following**
 A) Succinate to fumarate B) α -ketoglutarate to succinate
 C) Oxalosuccinate to glutarate D) Fumarate to malate
- Q.283 Krebs cycle is also known as:**
 A) Glyoxylate cycle B) Calvin cycle
 C) Citric acid cycle D) Glycolate cycle
- Q.284 Glycolysis and Krebs cycle are linked through:**
 A) Citric acid B) Acetyl CoA
 C) Succinic acid D) Oxaloacetic acid
- Q.285 Q.27 The formation of acetyl coenzyme-A from pyruvic acid is the result of its:**
 A) Reduction B) Dehydration
 C) Phosphorylation D) Oxidation
- Q.286 Cytochrome helps in:**
 A) Oxidation of glucose B) Release of energy
 C) Electron transport D) Growth of plant
- Q.287 The correct sequence of electron acceptors (cytochromes) in ATP synthesis is:**
 A) a-a₃-b-c B) b-c-a-a₃
 C) b-c-a₃-a D) c-b-a-a₃
- Q.288 Cytochromes are found at:**
 A) Cristae of mitochondria
 B) Matrix of mitochondria
 C) Outer mitochondrial membrane
 D) Inner mitochondrial compartment
- Q.289 The chemical equation of photosynthesis is exactly opposite to that of:**
 A) Lactic acid fermentation B) Anaerobic respiration
 C) Alcoholic fermentation D) Aerobic respiration
- Q.290 The wavelength that is absorbed completely by photosynthetic pigments is:**
 A) Transmitted B) Refracted
 C) Disappeared D) Reflected
- Q.291 All of the following are accessory pigments of photosynthesis except:**
 A) Carotenes C) Chlorophyll a
 B) Xanthophylls D) Chlorophyll b
- Q.292 The wavelength of visible light that is most absorbed by carotenoids is:**
 A) Blue-violet B) Green-yellow
 C) Yellow-orange D) Red-orange
- Q.293 Nitrogen is present in _____ of chlorophyll molecule:**
 A) Hydrophilic region B) Tail portion
 C) Phytol ring D) Hydrophobic end
- Q.294 Chlorophyll a found in reaction centre of PSII is:**
 A) 670 B) 680
 C) 690 D) 700
- Q.295 Functional group of chlorophyll a molecule that is different from chlorophyll b is:**
 A) -CH₃ C) -COOH
 B) -CHO D) -OH
- Q.296 How many pyrrole/s is/are involved in the formation of one porphyrin ring?**
 A) 1 B) 2
 C) 3 D) 4
- Q.297 Which of the following is the correct order of energy transfer from accessory pigments to the main photosynthetic pigments?**
 A) Chlorophyll 'b' — Carotenoids — Chlorophyll 'a'
 B) Chlorophyll 'a' — Chlorophyll 'b' — Carotenoids
 C) Carotenoids — Chlorophyll 'b' — Chlorophyll 'a'
 D) Carotenoids — Chlorophyll 'a' — Chlorophyll 'b'

- Q.298 The reactions of Calvin cycle take place at/in:**
 A) Outer membrane of chloroplast
 B) Inner membrane of chloroplast
 C) Thylakoid membrane
 D) Stroma of chloroplast
- Q.299 How many photons are required to excite one electron from chlorophyll molecule?**
 A) 1
 B) 2
 C) 3
 D) 4
- Q.300 The molecule which acts as final electron acceptor during non-cyclic photophosphorylation is:**
 A) Primary electron acceptor
 B) H_2O
 C) $NADP^+$ reductase
 D) $NADP^+$
- Q.301 During chemiosmosis in photosynthesis, protons are pumped from _____ to _____**
 A) Thylakoid lumen to stroma
 B) Stroma to thylakoid lumen
 C) Matrix to inter membranous space
 D) Inter membranous space to matrix
- Q.302 How many ATP molecules are consumed during first phase of Calvin cycle?**
 A) 3
 B) 6
 C) 9
 D) 18
- Q.303 The common requirement of photosynthesis and cellular respiration is:**
 A) Light energy as driving force
 B) Mitochondrial enzymes
 C) Cytochromes
 D) $NADH$ and O_2
- Q.304 What does carbon fixation refer in Calvin cycle?**
 A) Incorporation of CO_2 into Rubisco
 B) Synthesis of G3P from
 C) Incorporation of CO_2 in RuBP
 D) Synthesis of RuBP from CO_2
- Q.305 Which process of cellular respiration generates more number of reduced NAD?**
 A) Glycolysis
 B) Link reaction
 C) Krebs cycle
 D) Oxidative phosphorylation
- Q.306 Which stage of cellular respiration will not be by absence or presence of oxygen?**
 A) Glycolysis
 B) Pyruvic acid oxidation
 C) Krebs cycle
 D) Oxidative phosphorylation
- Q.307 Acetaldehyde is formed as an intermediate compound during:**
 A) Aerobic respiration
 B) Anaerobic respiration
 C) Lactate fermentation
 D) Ethanol fermentation
- Q.308 Net production of ATP during anaerobic respiration is:**
 A) 0 ATP
 B) 2 ATP
 C) 4 ATP
 D) 8 ATP
- Q.309 In electron transport chain, the electrons from $NADH$ and $FADH_2$ are passed to:**
 A) Cytochrome b
 B) Cytochrome a
 C) Cytochrome a_3
 D) Co-enzyme Q
- Q.310 During Krebs cycle, conversion of succinate into fumarate give rise to:**
 A) $NADH$
 B) $NADPH$
 C) $FADH_2$
 D) ATP
- Q.311 Net production of ATP molecules in a prokaryotic cell when a glucose molecule is completely oxidized is:**
 A) 34 ATP
 B) 36 ATP
 C) 38 ATP
 D) 40 ATP
- Q.312 Which of the following molecule splits into trioses during glycolysis?**
 A) Fructose 6-phosphate
 B) Glucose 6-phosphate
 C) Fructose 1, 3-bisphosphate
 D) Fructose 1, 6-bisphosphate
- Q.313 All of the following mechanisms of ATP synthesis are associated with chemiosmosis except:**
 A) Oxidative phosphorylation
 B) Cyclic photophosphorylation
 C) Non- Cyclic photophosphorylation
 D) Substrate level phosphorylation
- Q.314 Total number Of ATP produced through oxidative phosphorylation from one glucose molecule is:**
 A) 32 ATP
 B) 34 ATP
 C) 36 ATP
 D) 38 ATP

- Q.315 The chemical formula of pyruvic acid is:**
 A) $C_3H_4O_3$ B) $C_3H_6O_3$
 C) C_2H_5OH D) $C_4H_8O_4$
- Q.316 Which of the following enzyme can be inhibited by increased level of ATP?**
 A) Glucokinase C) Pyruvate decarboxylase
 B) Phosphofructokinase D) Triose isomerase
- Q.317 How many electrons are removed when one NADH is oxidized through respiratory chain?**
 A) 1 B) 2
 C) 3 D) 4
- Q.318 It is true about preparatory phase of glycolysis:**
 A) ATP are consumed B) ATP are produced
 C) NADH are consumed D) NAD^+ are produced
- Q.319 Cyclic photophosphorylation involves:**
 A) PS I B) PS I and PS II
 C) PS II D) P680
- Q.320 Photosystem – I and photosystem II are found in:**
 A) Stroma of chloroplast C) Matrix of mitochondria
 B) Grana of chloroplast D) Inner membrane of mitochondria
- Q.321 Photophosphorylation means:**
 A) Formation of ATP from ADP in the presence of light
 B) Formation of NADP
 C) Formation of ADP from ATP
 D) Formation of ATP in ETC
- Q.322 Chlorophyll molecules are green in colour because they:**
 A) Transform green light C) Absorb green light
 B) conversion of green light into red light D) Reflect green light
- Q.323 Cu^{+} is present in:**
 A) Plasmalemma B) Plastoquinone
 C) Plastocyanin D) Ferridoxin
- Q.324 The molecule, which mainly absorb light energy and convert it to chemical energy in photosynthesis are:**
 A) Chlorophyll B) Chlorophyll a
 C) Chlorophyll b D) Xanthophyll
- Q.325 Oxidative phosphorylation occurs in:**
 A) Chloroplast B) Mitochondria
 C) Peroxisomes D) Centriole
- Q.326 The first stable product of Calvin cycle is:**
 A) 3 – phosphoglycerate C) Glyceraldehyde – 3 phosphates
 B) 1, 3 biphosphoglycerate D) Ribulose – 5 – phosphate
- Q.327 The incomplete breakdown of sugars in anaerobic respiration results in the formation of:**
 A) Fructose + H_2O C) Alcohol + CO_2
 B) Glucose + CO_2 D) $H_2O + CO_2$
- Q.328 The formation of Acetyl Co – A from pyruvic acid is the result of its:**
 A) Reduction C) Dephosphorylation
 B) Dehydration D) Oxidative decarboxylation
- Q.329 Cytochromes help in:**
 A) Oxidation of glucose C) Growth and development
 B) Release of energy D) Electron transport
- Q.330 In which of the following reactions of glycolysis, oxidation takes place?**
 A) Glucose 6- PO_4 to fructose 6- PO_4
 B) Glyceraldehyde 3 – phosphate to 1, 3 – diphosphoglycerate
 C) 1, 3 – diphosphoglycerate to 3 – phosphoglycerate
 D) 2 - phosphoglycerate to phosphoglycerate
- Q.331 In the Krebs cycle the FAD electron transport system operates during the conversion of:**
 A) Succinyl CoA to succinic acid. C) Succinic acid to fumaric acid
 B) a - ketoglutarate to succinyl CoA D) Fumaric acid to malic acid

- Q.332 Following are the characteristics of chlorophyll head EXCEPT:**
 A) Flat B) Hydrophobic
 C) Hydrophilic D) Square
- Q.333 Co-enzymes Q is oxidized by cytochrome:**
 A) b B) a₃
 C) a D) c
- Q.334 How many ATP and NADPH₂ are required for synthesis of one molecule of glucose?**
 A) 12ATP and 12NADPH₂ C) 18ATP and 12NADPH₂
 B) 12ATP and 18NADPH D) None of the above
- Q.335 Calvin cycle expends the following for fixation of 3-molecules of CO₂**
 A) 9ATP and 6NADPH₂ C) 9ATP and 3NADPH₂
 B) 8ATP and 6NADPH₂ D) 6ATP and 9NADPH₂
- Q.336 During light reaction of photosynthesis which of the following phenomenon is observed during cyclic photophosphorylation as well as non – cyclic photophosphorylation?**
 A) Formation of ATP
 B) Release of O₂
 C) Involvement of both pigment system – I and pigment system - II
 D) Formation of NADPH₂
- Q.337 The chlorophyll molecule has a**
 A) Porphyrin head and phytol tail
 B) Phytol head and porphyrin tail
 C) Phosphate head and porphyrin tail
 D) All of the above
- Q.338 The molecular mechanism of oxidative phosphorylation takes place in conjunction with respiratory chain in the:**
 A) Outer membrane of mitochondrion
 C) Matrix of mitochondrion
 B) Inner membrane of mitochondrion
 D) Inner side of thylakoid membrane
- Q.339 Which of the following is concerned with CO₂ fixation?**
 A) Krebs' cycle B) Calvin cycle
 C) Nitrogen cycle D) Glycolysis
- Q.340 The electron transport chain of photosynthetic process is**
 A) In the stroma of chloroplast
 C) Present in the outer membrane of chloroplast
 B) Bound to the thylakoid membranes
 D) Present in mitochondria
- Q.341 In grana of Chloroplast, the reaction ADP+Pi = ATP during day shows.**
 A) Oxidative phosphorylation C) Substrate level phosphorylation
 B) Photophosphorylation D) Dephosphorylation
- Q.342 Stroma in the chloroplasts of higher plants contains**
 A) Light – independent reaction enzymes C) Ribosomes
 B) Light – dependent reaction enzymes D) Chlorophyll
- Q.343 Which of the following is the first compound that accepts carbon dioxide during dark phase of photosynthesis?**
 A) NADP B) RuBP
 C) Ferredoxin D) Cytochrome
- Q.344 Cyclic – photophosphorylation results in the liberation of**
 A) NADPH C) ATP, NADPH and oxygen
 B) ATP and NADPH D) ATP
- Q.345 During the different processes of photosynthesis, splitting of water takes place in**
 A) Photosystem I
 C) Photosystem II
 B) Lumen of thylakoid
 D) Inner surface of thylakoid membrane.

- Q.346** Energy of these compounds is directly used in the formation of carbohydrates from CO_2 :
 A) FADH, NADH
 B) Solar energy
 C) ATP, NADPH
 D) ATP, FADH
- Q.347** Which process needs oxygen?
 A) Glycolysis
 B) Chemiosmosis
 C) Krebs cycle
 D) ETC
- Q.348** It is found in all photosynthetic plants and green algae:
 A) Chlorophyll – b
 C) Chlorophyll – a
 B) Bacteriochlorophyll
 D) Carotenoids
- Q.349** The net product of non-cyclic electron flow in photosynthesis is:
 A) ATP
 B) O_2
 C) NADPH₂
 D) All of these
- Q.350** Unstable 6-C compound in dark reaction splits into:
 A) PGA
 B) RUBP
 C) PGAL
 D) none of these
- Q.351** The tallest peak is obtained in the absorption spectrum of:
 A) Chlorophyll a
 B) Chlorophyll b
 C) Carotenoids
 D) Phycoerythrin
- Q.352** The atmospheric oxygen is continuously consumed in cellular respiration; it is mainly replenished by:
 A) Photolysis of water
 C) Photophosphorylation
 B) Oxidative phosphorylation
 D) Z – scheme
- Q.353** Pick up the one involved only in non – cyclic electron flow of light reaction of photosynthesis:
 A) Pq
 B) Pc
 C) Cytochrome complex
 D) Fd
- Q.354** $\text{NADH}^+ + \text{H}^+$ and FAD^+ collectively yield:
 A) 3ATP
 B) 2ATP
 C) 5ATP
 D) 6ATP
- Q.355** The major/final function of the cellular respiration is to make:
 A) ATP
 B) FAD
 C) NADP
 D) Water
- Q.356** Chlorophyll a differs from chlorophyll b in having:
 A) Four pyrrole rings
 C) Four nitrogen atoms
 B) CHO functional group
 D) CH_3 functional group
- Q.357** Calvin cycle can be divided into:
 A) Two phases
 B) Three phases
 C) Four phases
 D) Five phases
- Q.358** Pick up the productive phase of Calvin cycle:
 A) Reduction
 B) Fixation
 C) Regeneration
 D) Carboxylation
- Q.359** The step of Kreb's cycle, accompanied by a free energy change, utilized in the synthesis of an ATP molecule is conversion of:
 A) Isocitrate into α – ketoglutarate
 C) Succinate into Fumarate
 B) α - ketoglutarate into succinate
 D) Fumarate into malate
- Q.360** 2-Phosphoglycerate is converted into PEP by:
 A) Oxidation
 B) Hydration
 C) Dehydration
 D) Reduction
- Q.361** During the first step of reduction phase of Calvin cycle, a three-carbon compound is:
 A) Phosphorylated
 B) Reduced
 C) Dephosphorylated
 D) Oxidized
- Q.362** ATP produced in one Calvin cycle:
 A) 0
 B) 18
 C) 6
 D) 12
- Q.363** Glycolysis is not:
 A) In cytoplasm
 C) Formation of acetic acid
 B) Formation of pyruvic acid
 D) Break down of glucose

- Q.364 In absence of oxygen breakdown of glucose through glycolysis yields:**
 A) Lactic acid
 B) Alcohol and CO₂
 C) Lactic acid or Alcohol and CO₂
 D) Pyruvate
- Q.365 Molecular formula of chlorophyll a is:**
 A) C₅₅ H₇₂ O₅ N₄ Mg
 B) C₅₅ H₇₀ O₆ N₄ Mg
 C) C₃₅ H₃₀ O₅ N₄ Mg
 D) C₅₄ H₇₀ O₆ N₄ Mg
- Q.366 Total numbers of NADH produced from glucose during respiration is**
 A) 10
 B) 12
 C) 36
 D) 3
- Q.367 Which of the following is least effective in photosynthesis?**
 A) sunlight
 B) blue light
 C) red light
 D) green light
- Q.368 Both respiration and photosynthesis require:**
 A) sunlight
 B) cytochromes
 C) green cells
 D) organic substrate
- Q.369 The first step in photosynthesis is the:**
 A) formation of ATP
 B) excitation of electron from chlorophyll by photon of light
 C) ionization of water
 D) attachment of CO₂ to carbon sugar
- Q.370 Which colour of light gives maximum absorption peak of chlorophyll a:**
 A) Red
 B) Green
 C) Blue
 D) Yellow
- Q.371 The empirical formula/structure for chlorophyll a is:**
 A) C₃₅ H₇₅ O₅ N₄ Mg
 B) C₅₅ H₇₂ O₅ N₄ Mg
 C) C₆₅ H₇₀ O₆ N₄ Mg
 D) C₄₅ H₇₀ O₆ N₄ Mg
- Q.372 Which of the following occurs during dark phase of photosynthesis?**
 A) Hydrogen is released
 B) Molecular oxygen is released
 C) ATP is produced
 D) PGAL is synthesized
- Q.373 NADPH₂ is generated in noncyclic photophosphorylation through:**
 A) glycolysis
 B) photosystem II
 C) photosystem I
 D) anaerobic respiration
- Q.374 Chemiosmotic theory of ATP synthesis in chloroplast & mitochondria is based on:**
 A) membrane potential
 B) accumulate of Na⁺
 C) proton gradient
 D) accumulation of K⁺
- Q.375 Which of the following is essentially regenerated to complete the calvin cycle?**
 A) PGA
 B) PEP
 C) RUBP
 D) OAA
- Q.376 In photosystem-I (PSI) of light reaction which substrate works as an electron acceptor:**
 A) NAD⁺
 B) NADP⁺
 C) ADP
 D) FADH⁺
- Q.377 In a chloroplast the highest number of protons are found in:**
 A) Lumen of thylakoids
 B) Antennae complex
 C) Inter membrane space
 D) stroma
- Q.378 Which is formed through phosphorylation in glycolysis?**
 A) Fructose 1-6 Biphosphate
 B) DHA-3-Phosphate
 C) Both are correct
 D) Glyceraldehyde-3-phosphate
- Q.379 Aerobic glycolysis is _____ times efficient than anaerobic glycolysis**
 A) 2 times
 B) 10 times
 C) 4 times
 D) 18 times
- Q.380 Ratio of CO₂ producer in aerobic and anaerobic respiration is**
 A) 3 : 1
 B) 4 : 1
 C) 2 : 1
 D) 1 : 1
- Q.381 Upon complete oxidation of 1 molecule of pyruvic acid in mitochondrial respiration the molecules of ATP generated are**
 A) 38
 B) 8
 C) 30
 D) 15

- Q.382 Oxidation of one molecule of glucose yields 38 molecules of ATP in the proportion of**
 A) All the 38 molecules in mitochondrion
 B) 8 outside mitochondria and 30 inside mitochondrion
 C) two glycolysis and 36 inside the Krebs cycle
 D) two outside and 36 inside the mitochondria
- Q.383 In electron transport system. The cytochrome which donates electron to free oxygen is**
 A) Cyt b
 B) Cyt a
 C) Cyt c1
 D) Cyt a3
- Q.384 The molecule that regularly enters through the inner membrane of mitochondrion is**
 A) ATP
 B) glucose
 C) Acetyl co-enzyme A
 D) Citric acid
- Q.385 Which of the following is common to glycolysis and krebs' cycle?**
 A) Substrate level phosphorylation
 B) Photophosphorylation
 C) FADH_2 formation
 D) Both occur in matrix of mitochondria
- Q.386 One molecule of sucrose yields _____ ATP in anaerobic respiration**
 A) 2
 B) 4
 C) 38
 D) 36
- Q.387 If fructose 1-6 biphosphate is oxidized in aerobic respiration, the ATP production will be**
 A) 36
 B) 38
 C) 32
 D) 40
- Q.388 To start respiration, a living cell requires**
 A) Only glucose
 B) glucose + O_2
 C) glucose, ATP and enzymes
 D) glucose + enzymes
- Q.389 The rate of oxidative phosphorylation and ATP synthesis is related with**
 A) Quantasomes
 B) Ribosomes
 C) Elementary Particles
 D) Lysosomes
- Q.390 Cytochromes are found in**
 A) entire inner mitochondrial membrane
 B) Matrix of mitochondria
 C) Cristae only
 D) oxysomes
- Q.391 Cytochromes are component of ETC and act as**
 A) O_2 acceptor
 B) H_2 acceptor
 C) Electron acceptor
 D) All of these
- Q.392 In Krebs' cycle, the H^+ removed at succinate level is accepted by**
 A) FAD
 B) ADP
 C) NAD
 D) FMN
- Q.393 One turn of krebs' cycle produces**
 A) 1 FADH_2 , 1 NADH and 1 ATP
 B) 1 FADH_2 , 2 NADH and 1 ATP
 C) 1 FADH_2 , 3 NADH and 1 ATP
 D) 2 FADH_2 , 2 NADH and 2 ATP
- Q.394 Excess of ATP inhibits which enzyme**
 A) Phosphofructokinase
 B) Pyruvic
 C) Isomerase
 D) Acomitase
- Q.395 In glycolysis, during oxidation, electrons are removed by**
 A) ATP
 B) NAD^+
 C) GAP
 D) Molecular oxygen
- Q.396 Following is correct sequence of energy transfer between photosynthetic pigments?**
 A) Chl.a> chl.b> carotenoids
 B) Chl.b> carotenoids....> chl.a
 C) Carotenoids.....> chl.b> chl.a
 D) In any direction
- Q.397 The end product of anaerobic respiration in humans and other mammals is?**
 A) Pyruvic acid
 B) Ethanol
 C) Lactic acid
 D) Glucose
- Q.398 Which part of chlorophyll molecule absorbs light?**
 A) Phytol
 B) Porphyrin ring
 C) Pyrole
 D) Thylakoid membrane
- Q.399 During photophosphorylation, each photon excites _____ electron/s:**
 A) 1
 B) 2
 C) 3
 D) 4

- Q.400 Light reaction results in the formation of:**
 A) O₂ B) NADPH+H
 C) ATP D) All A, B, C
- Q.401 During light phase of photosynthesis _____ is oxidized and _____ is reduced:**
 A) CO₂ and water B) Water and CO₂
 C) Water and NADP D) NADPH₂ and CO₂
- Q.402 The product of carbohydrate metabolism that can be stained is:**
 A) Glucose C) Starch
 B) cellulose D) Fructose
- Q.403 Dark reaction requires of light reaction for:**
 A) Carboxylation of RUBP B) Regeneration of RUBP
 C) Formation Of hexose sugar D) Reduction of PGA
- Q.404 Which pathway for aerobic cellular respiration is located in the cytoplasm of the eukaryotic cell?**
 A) Glycolysis C) Pyruvic acid oxidation
 B) Krebs cycle D) Electron transport chain
- Q.405 Coenzyme that is used in cellular respiration:**
 A) NADP⁺ B) NAD⁺
 C) Niacin D) Alcohol dehydrogenase
- Q.406 The end product of glycolysis is**
 A) Acetyl Co-A B) NADH
 C) Pyruvate D) Lactate
- Q.407 When yeast ferment glucose, the products obtained are:**
 A) Ethanol and water B) Ethanol and CO₂
 C) Water and lactic acid D) Lactic acid and CO₂
- Q.408 During respiratory chain of cellular respiration, cytochrome c reduces:**
 A) Cytochrome a B) Cytochrome a.
 C) Cytochrome b D) Cytochrome a complex
- Q.409 Out of 40 ATP molecules produced per glucose, 2 ATP molecules are formed during:**
 A) Glycolysis B) Pyruvic acid oxidation
 C) Krebs cycle D) Electron transport chain
- Q.410 FADH₂ is oxidized in:**
 A) Pyruvate decarboxylation B) Respiratory chain
 C) Glycolysis D) Krebs cycle
- Q.411 Product of phosphofructokinase is:**
 A) Glucose 6-phosphate B) Acetyl-CoA
 C) Fructose 1, 6-Bisphosphate D) Glyceraldehyde 3-phosphate
- Q.412 Which color is absorbed by carotenoids and reflected by chlorophylls?**
 A) Blue B) Green
 C) Violet D) Red
- Q.413 Reducing power for dark reactions of photosynthesis is:**
 A) NADP B) NADPH
 C) ATP D) FADH₂
- Q.414 Number of electrons required to reduce NADP⁺ is:**
 A) 1 B) 2
 C) 3 D) 4
- Q.415 It is not required for photophosphorylation:**
 A) Water B) Carbon dioxide
 C) NADP⁺ D) ADP
- Q.416 A product of dark reaction of photosynthesis other than carbohydrate is:**
 A) ATP B) NADPH
 C) H₂O D) O₂
- Q.417 Calvin cycle is also known as C₃ pathway because:**
 A) Precursor is 3 carbon B) Initial product is 3 carbon
 C) Intermediates are 3 carbon D) Final product is 3 carbon
- Q.418 Formula for lactic acid is:**
 A) C₃H₄O₃ B) C₃H₆O₃
 C) C₂H₅OH D) C₆H₁₂O₆

Q.419 In case of anaerobic respiration, NADH of glycolysis are used for:

- A) Pyruvic acid oxidation
- B) Oxidative phosphorylation
- C) Formation of lactate
- D) Formation of ATP

Q.420 What is net production of ATP during anaerobic respiration?

- A) 0 ATP
- B) 2ATP
- C) 4 ATP
- D) 8 ATP

Q.421 Which of the following pathways outlines the order of events during aerobic cellular respiration?

First → Last

- A) Glucose → triose phosphate → pyruvate Krebs cycle → CO₂ + H₂O +ATP
- B) Glucose → triose phosphate → pyruvate → Krebs cycle →CO₂ → H₂O + ADP Pi
- C) Glucose → hexose phosphate → pyruvate Krebs cycle → CO₂ → H₂O + ADP + Pi
- D) Glucose → hexose phosphate → pyruvate → Krebs cycle → ethanol → C₀₂ → ATP

Q.422 It is the product of glycolysis:

- A) Lactate
- B) Citrate
- C) Pyruvate
- D) Ethanol

Q.423 It is an ATP consuming conversion glycolysis:

- A) Fructose 6 -phosphate to fructose 1,6-bisphosphate
- B) Glyceraldehyde 3-phosphate to 1,3-bisphosphoglycerate
- C) 1,3-bisphosphoglycerate to 3-phosphoglycerate
- D) Phosphoenol pyruvate to pyruvate

BIOENERGETICS WORKSHEET BY SKN ANSWER KEY

Q	A	Q	A	Q	A	Q	A	Q	A	Q	A	Q	A	Q	A	Q	A
1	D	51	B	101	C	151	A	201	D	251	C	301	B	351	B	401	C
2	B	52	C	102	C	152	B	202	D	252	B	302	B	352	A	402	C
3	D	53	A	103	B	153	A	203	D	253	C	303	C	353	A	403	D
4	D	54	B	104	B	154	A	204	C	254	B	304	C	354	A	404	A
5	B	55	A	105	B	155	D	205	D	255	B	305	C	355	A	405	B
6	D	56	C	106	A	156	B	206	C	256	D	306	A	356	D	406	C
7	B	57	B	107	D	157	A	207	D	257	C	307	D	357	B	407	B
8	C	58	C	108	D	158	B	208	D	258	C	308	B	358	A	408	D
9	D	59	C	109	D	159	C	209	C	259	B	309	D	359	B	409	C
10	A	60	B	110	A	160	D	210	C	260	C	310	C	360	C	410	B
11	D	61	B	111	D	161	B	211	A	261	A	311	C	361	A	411	C
12	C	62	A	112	C	162	B	212	D	262	D	312	D	362	A	412	B
13	B	63	D	113	A	163	D	213	C	263	C	313	D	363	C	413	B
14	A	64	D	114	A	164	B	214	A	264	A	314	B	364	D	414	B
15	C	65	C	115	D	165	B	215	D	265	A	315	A	365	A	415	B
16	B	66	A	116	C	166	A	216	A	266	D	316	B	366	A	416	C
17	C	67	B	117	C	167	A	217	B	267	A	317	B	367	D	417	B
18	C	68	A	118	B	168	B	218	D	268	A	318	A	368	B	418	B
19	D	69	C	119	B	169	C	219	B	269	A	319	A	369	B	419	C
20	C	70	B	120	B	170	A	220	B	270	C	320	B	370	C	420	B
21	A	71	A	121	C	171	C	221	A	271	C	321	A	371	B	421	A
22	C	72	C	122	A	172	A	222	A	272	A	322	D	372	D	422	C
23	D	73	B	123	A	173	D	223	B	273	D	323	C	373	C	423	A
24	A	74	C	124	A	174	C	224	C	274	B	324	B	374	C		
25	A	75	D	125	B	175	A	225	A	275	C	325	B	375	C		
26	D	76	C	126	C	176	A	226	C	276	D	326	A	376	B		
27	C	77	A	127	A	177	A	227	B	277	A	327	C	377	A		
28	B	78	A	128	A	178	D	228	C	278	B	328	D	378	A		
29	D	79	A	129	A	179	B	229	C	279	A	329	D	379	C		
30	B	80	B	130	B	180	B	230	B	280	C	330	B	380	A		
31	B	81	D	131	C	181	A	231	D	281	C	331	C	381	D		
32	C	82	A	132	C	182	D	232	A	282	B	332	B	382	D		
33	C	83	C	133	D	183	B	233	B	283	C	333	A	383	D		
34	D	84	D	134	B	184	B	234	B	284	B	334	C	384	C		
35	B	85	C	135	C	185	B	235	C	285	D	335	A	385	A		
36	C	86	B	136	B	186	A	236	A	286	C	336	A	386	B		
37	B	87	B	137	D	187	D	237	C	287	B	337	A	387	D		
38	C	88	C	138	A	188	D	238	A	288	A	338	B	388	C		
39	D	89	C	139	B	189	B	239	C	289	D	339	B	389	C		
40	C	90	C	140	B	190	C	240	C	290	C	340	B	390	A		
41	C	91	B	141	B	191	A	241	C	291	C	341	B	391	C		
42	B	92	B	142	A	192	C	242	D	292	A	342	A	392	A		
43	B	93	B	143	A	193	A	243	C	293	A	343	B	393	C		
44	B	94	C	144	A	194	B	244	A	294	B	344	D	394	A		
45	C	95	B	145	A	195	C	245	C	295	A	345	A	395	B		
46	A	96	D	146	B	196	C	246	B	296	D	346	C	396	C		
47	A	97	A	147	A	197	B	247	D	297	C	347	D	397	C		
48	C	98	D	148	B	198	B	248	C	298	D	348	C	398	B		
49	C	99	C	149	C	199	A	249	C	299	A	349	D	399	A		
50	B	100	A	150	D	200	C	250	A	300	D	350	A	400	D		