



- A) 15 inductor in parallel  
C) 20 inductor in series
- B) 15 inductor in parallel  
D) 20 inductor in parallel
11. In circuit X,  $L = 100 \text{ mH}$  and  $C = \mu F$  are attached in series. In circuit Y,  $L = 100 \text{ mH}$  and  $C = 10 \mu F$  are attached in parallel. The resonating frequency  $f_x$  and  $f_y$  are related as?  
A)  $f_x = f_y$   
C)  $f_x = 10 f_y$   
B)  $f_x = 0.01 f_y$   
D) Cannot be determined
12. A transformer has 100 turns on the input side 500 turns on the output side. If rms value of input voltage are 220V and 5A respectively. The output power is:  
A) 500 watt  
C) 1440 watt  
B) 1100 watt  
D) 50 watt
13. When you drop a ball it accelerate at  $9.8 \text{ m/sec}^2$ . If you instead throw it downward then it accelerates immediately after leaving your hand assuming no air resistance:  
A) 9.8  
C) More than 9.8  
B) Less than 9.8  
D) Depending throwing speed
14. A truck of mass 5000 Kg are both travelling at a speed at a speed of 36 Km/hr. Assume the time required to stop the truck in 10 sec is X Newton and the force required to stop the car in 10 sec us Y Newton. The difference X and Y is equal to?  
A) 4 Mega Newton  
C) 4 Kilo Newton  
B) 14.4 Kilo Newton  
D) 14.4 Mega Newton
15. A tight wire is clamped at two points 2m apart. It is plucked near one end, what are the three longest wavelengths produced on the vibrating wire?  
A) 2m, 1m, 0.67m  
C) 4m, 2m, 1m  
B) 4m, 2m, 1.33m  
D) 1m, 0.5m, 0.33m
16. When using optical fiber in data transmission, the angle of incidence  $O_i$  of the light siyrce ib the glass fiber should be?  
A) Less than critical angle  
C) Greater than critical angle  
B) Less than angle of refraction  
D) Greater than angle of refraction
17. Consider two spheres A and B if radii  $r_a$  and  $r_b$  both concentric with point charge Q. If  $r_a > r_b$  then the total flux passing normally through the sphere A and B is related as?  
A) Flux through A is greater  
B) Flux through both sphere is equal  
C) Flux through A may be greater or less than Q depending on radius  
D) Flux through sphere B is greater
18. A mixture of two gases at constant temperature contains molecules if two kinds. The first kind of mass  $m^1$  and rms speed  $c^1$  and the second molecule has mass  $m^2$  and rms speed  $c^2$ . The ratio  $\frac{c_1}{c_2}$  is:  
A)  $\frac{m_1}{m_2}$   
C)  $\left[ \frac{m_1}{m_2} \right]^{\frac{1}{2}}$   
B)  $\frac{m_2}{m_1}$   
D) None of these
19. A particle is moving in a straight line with velocity  $v = (4 - t^2)$  where t us the time from fixed point then acceleration of the particle after 4 sec is:  
A)  $-8 \text{ m/sec}^2$   
C)  $-4 \text{ m/sec}$   
B)  $-8 \text{ m/sec}$   
D)  $-4 \text{ m/sec}^2$
20. The maximum value if drag forcer on an object is 9.8 N. What will be the value if its mass?  
A) 9.8 kg  
C) 2kg  
B) 4kg  
D) 1 kg
21. Which of the following should remain constant if no torque acts upon a bofdy:  
A) Linear constant  
C) Momentum  
B) Angular momentum  
D) Charge
22. Rocket propulsion is according to law of conservation of:  
A) Energy  
C) Momentum  
B) Mass  
D) Charge
23. The time period of pendulum at centre of earth:  
A) Zero  
C) Infinite  
B) Maximum  
D) Minimum
24. The wavelength of wave is 5000 A°. This wave will be in region:  
A) U. V  
C) Visible  
B) Radio  
D) Infrared
25. Which of the following friction is self-adjusting force:  
A) Static  
C) Dynamic  
B) Limiting  
D) Sliding

26. A body absorbs heat at constant temperature, then this phenomenon will be:  
A) Melting point  
B) Boiling point  
C) Evaporation  
D) Both A and B
27. Speed of sound in vacuum is:  
A)  $332\text{m sec}^{-1}$   
B)  $340\text{m sec}^{-1}$   
C)  $0\text{m sec}^{-1}$   
D)  $350\text{m sec}^{-1}$
28. Most ideal gas at room temperature is:  
A)  $\text{CO}_2$   
B)  $\text{NH}_3$   
C)  $\text{SO}_2$   
D)  $\text{H}_2$
29. When spectrum of hydrogen atom is taken in magnetic field, some new lines are created. This is called:  
A) Resonance effect  
B) Zeeman's effect  
C) Stark effect  
D) Electric effect
30. Ball pen functions on the principle of:  
A) Viscosity  
B) Boyle's law  
C) Gravitational force  
D) Surface tension

31. Find all the angles between 0 and 360 degree such that  $\sin x = \frac{-1}{2}$  ?  
 A) 210,330 B) 30,150  
 C) 30,210 D) 330,150
32. On simplifying the equation  $\frac{1 + \cos x}{1 + \sec x}$ , the result is?  
 A)  $\sin x$  B)  $\cos x$   
 C)  $\csc x$  D)  $\sec x$
33. Binomial expansion of an expression A gives  $1 - 8x + 24x^2 - 32x^3 - 16x^4$ . The expression A is given by?  
 A)  $(1-2x)^4$  B)  $(1-4x)^4$   
 C)  $(1+2x)^4$  D)  $(1+4x)^4$
34. Differentiating the equation  $(x-1)(x+2)^2$  with respect to  $x$  gives?  
 A)  $2x(x+2)$  B)  $2(x-1)(x+2)$   
 C)  $2(x-1)$  D)  $3x(x+2)$
35.  $2^{2x} - 10 + 2^{x+1} + 16 = 0$  gives value of  $x$  ?  
 A) (3, 4) B) (8, 4)  
 C) (1, 3) D) (5, 9)
36. The area enclosed by a curve  $y = \cos x$  and  $x$  axis from  $x = 0$  to  $x = \frac{\pi}{2}$  is the same as?  
 A)  $\int_{\frac{\pi}{2}}^{\pi} \sin x dx$  B)  $\int_{\frac{\pi}{2}}^{\pi} \sin x dx$   
 C)  $-\int_{\frac{\pi}{2}}^{\pi} \cos x dx$  D) All of these
37. A complex number  $(1+i\sqrt{3})$  can be expresses as?  
 A)  $2 \cos 30 + i \sin 30$  B)  $\cos 60 + i \sin 60$   
 C)  $2(\cos 60 + i \sin 60)$  D)  $\sin 30 + i \cos 30$
38. If matrix  $\begin{bmatrix} 0 & 0 \\ 0 & p \end{bmatrix}$  then the value of the expression  $A + A^{-1} = KI$  is?  
 A) 1, 2 B) -1, 2  
 C) Cannot valid for any value D) 0, 1
39. Given that  $y = x^2 \sqrt{2x-1}$  then  $\frac{dy}{dx} = \frac{x(2x+2)}{\sqrt{2x-1}}$ . Then result of  $\int_0^5 \frac{x(2x+2)}{\sqrt{2x-1}}$  are:  
 A) 78 B) 75  
 C) 33 D) 36
40. Which one the valid root of  $3x^3 - 8x^2 - 5x + 6$  ?  
 A) 4 B) 3  
 C) 8 D) Both A and B
41. Find the set of value of  $m$  for which expression  $2x^2 - mx + 2 = 0$  have real roots?  
 A)  $m \leq -4$  B)  $-4 \leq m \leq 4$   
 C)  $m \geq 4$  D) None
42. There are 50 students in the class put of these 38 used desktop computers, 16 out of these used laptop. It is noited that five students neither used laptop or computer. The student having both laptop and computer is A. based on the information find out the greatest value of A :  
 A) 36 B) 4  
 C) 16 D) 30
43. There are 50 students in the class put of these 38 used desktop computers, 16 out of these used laptop. It is noited that five students neither used laptop or computer. The student having both laptop and computer is A. based on the information find out the greatest value of A :  
 A) 16 B) 8  
 C) 4 D) 0
44. The slop of the line with inclination  $120^\circ$  is:  
 A) 0 B) 1  
 C)  $-\sqrt{3}$  D) Underlined
45. A line segment whose end points lie on a circle is called the:  
 A) Arc of the circle B) Centre of circle  
 C) Chord of circle D) Radius of circle
46.  $2x + 3 < 0$  is:  
 A) Inequality B) Equality

47. The projection of  $-2i + 3j + 7k$  is:  
 C) Identity D) None  
 A)  $\frac{13}{5}$  B)  $\frac{13}{4}$   
 C)  $\frac{13}{\sqrt{5}}$  D) 13
48. The trigonometric equation contains \_\_\_\_\_ trigonometric functions:  
 A) At least one B) At most one  
 C) Exactly one D) None
49. The minimum value of the functions  $f(x) = x^2 - x - 2$  is:  
 A)  $-\frac{9}{2}$  B)  $-\frac{9}{4}$   
 C) -1 D) 0
50.  $\int \frac{2x-1}{x^2-x-1} dx =$  \_\_\_\_\_:  
 A)  $\ln(2x-1) + c$  B)  $(2x-1) + c$   
 C) 0 D)  $\ln(x^2 - x + 1) + c$
51. The period of  $5 \tan \frac{x}{3}$  is:  
 A)  $\pi$  B)  $2\pi$   
 C)  $3\pi$  D)  $4\pi$
52. The triangle has \_\_\_\_\_ important elements:  
 A) 3 B) 4  
 C) 5 D) 6
53. Find the area between the  $x$  axis and the curve  $y = 4x - x^2$ :  
 A)  $\frac{32}{3}$  B)  $\frac{27}{4}$   
 C)  $\frac{14}{3}$  D)  $\frac{45}{5}$
54. Eccentricity is less than 1 for:  
 A) Circle B) Ellipse  
 C) Hyperbola D) Parabola
55. If  $f(x) = \sin x$  slope of normal to tangent of functions at  $x = 0$  will be:  
 A) -1 B) +1  
 C) 0 D) None
56. If resistivity of substance will be  $10^4$ . What conductor will be called?  
 A) Semi-conductor B) Super conductor  
 C) Conductor D) Insulator
57. Which of the following points is a point of intersection of the curve  $x^2 + y^2 = 8$  and the straight line  $2x - y = 2$ ?  
 A) -2, 2 B) 2, 2  
 C) 0.4, 2.8 D) 0.1
58. The straight lines are given as:  
 $M: y = 3x + 1$  and  $N: y = \frac{-1}{3}x + 2$ . Which of the following statement is correct?  
 A) M and N are parallel B) M and N are perpendicular  
 C) M and N not intersect D) M and N intersect at multiple points
59. Let the real valued function F and G be defined by  $2f(x) = 2x + 1$  and  $2g(x) = x^2 - x$ .  
 A)  $2x^2 - x + 1$  B)  $2x^2 - 2x + 2$   
 C)  $2x^2 - 2x + 2$  D)  $x^2 - 2x + 1$
60. The y intercept and the slope of the line expressed by  $3x - 2y + 6 = 0$ ?  
 A)  $\frac{3}{2}, +3$  B)  $+3, +\frac{3}{2}$   
 C)  $-\frac{3}{2}, -\frac{3}{2}$  D) -3, -3

CHEMISTRY

61. In microwave oven, the wave energy produced is absorbed by certain polar molecule, in which molecule out of the given molecules would absorb maximum energy?  
 A) SiO<sub>2</sub> B) C<sub>2</sub>H<sub>5</sub>OH  
 C) NaCl D) None of these
62. Which of the following statement regarding CATHODE RAY is correct?  
 A) Cathode rays can ionize gas  
 B) Cathode ray can possess momentum  
 C) Cathode rays cannot cause chemical changes  
 D) All of these
63. Ionization energy does not increase?  
 A) With small atomic radius of atom B) Deposition of PbSO<sub>4</sub> at cathode  
 C) In increases in number of electronic shell D) None of these
64. Which of the following molecule does not exhibit tetrahedral arrangement of electron pairs?  
 A) H<sub>2</sub>O B) SiCl<sub>2</sub>  
 C) NH<sub>3</sub> D) None of these
65. The change in enthalpy of reaction NaOH+HCl → NaCl + H<sub>2</sub>O is:  
 A) Heat of reaction B) Heat of neutralization  
 C) Heat of fusion D) Heat of combustion
66. In which reaction hydrogen behaves as oxidizing agent?  
 A) H<sub>2</sub> + Cl<sub>2</sub> → 2HCl B) C<sub>2</sub>H<sub>2</sub>CHO + H<sub>2</sub> → 2HCl  
 C) 2Na + H<sub>2</sub> → 2NaH D) C<sub>2</sub>H + H<sub>2</sub> → C<sub>2</sub>H<sub>6</sub>
67. How many atoms of carbon are there in 18g of C<sub>2</sub>H<sub>12</sub>O<sub>6</sub>?  
 A) 6.02 x 10<sup>23</sup> B) 3.6 x 10<sup>23</sup>  
 C) 6.02 x 10<sup>22</sup> D) 3.6 x 10<sup>22</sup>
68. In an experiment 0.10g of gas found to occupy 83.1cm<sup>3</sup> measured at standard pressure. The relative molecular mass is:  
 A)  $\frac{(1.10)(8.31)(27)}{(1.0 \times 10^{-3})(83.3)}$  B)  $\frac{Kr(A)(B)}{Kr[C][D]}$   
 C)  $\frac{(0.10)(8.31)(27)}{(1.010^3 \times 10^{23})}$  D)  $\frac{(1.10)(8.31)(300)}{(1.0 \times 10^3)(83.1^{-6})}$
69. Which of the following consist of atoms and molecules and are held together by van der wall's forces?  
 A) H<sub>2</sub>O B) Cu  
 C) CO<sub>2</sub> D) MgO
70. Which molecule, out of given molecules will not form hydrogen bond with another of the given molecules?  
 A) NH<sub>3</sub> B) CH<sub>3</sub>OH  
 C) CH<sub>2</sub> - NH<sub>3</sub> D) CH<sub>2</sub>CHO
71. The strongest reducing agent among the following is:  
 A) Cl<sup>-</sup> B) K<sup>+</sup>  
 C) Ar D) Ca<sup>+2</sup>
72. Which of the following hydride is ionic in nature?  
 A) NaH B) NH<sub>4</sub>  
 C) CH<sub>4</sub> D) H<sub>2</sub>S
73. Which of the following equation represents reaction when Lithium nitrate is heated?  
 A) 2LiNO<sub>3</sub> → Li<sub>2</sub>O B) 4LiNO<sub>3</sub> → 4 LiO<sub>2</sub> + 4NO<sub>2</sub> + O<sub>2</sub>  
 C) 4 LiNO<sub>3</sub> → 2Li<sub>2</sub>O + 4NO<sub>2</sub> D) 4LiNO<sub>3</sub> → 2 Li<sub>2</sub>O + 4NO<sub>2</sub> + O<sub>2</sub>
74. Which compound of the following is used in breathing equipment's as it absorbs CO<sub>2</sub> and gives out O<sub>2</sub> at the same time?  
 A) Na<sub>2</sub>O<sub>2</sub> B) KO<sub>2</sub>  
 C) MgO D) BaO
75. The colour of [Ti(H<sub>2</sub>O)<sub>6</sub>]<sup>3+</sup>  
 A) Yellow B) Violet  
 C) Green D) Orange
76. The equation of the rate of forward reaction is?  
 A) K<sub>f</sub> B) Kr(A)(B)  
 C) K<sub>f</sub>[C][D] D)  $\frac{Kr(A)(B)}{Kr[C][D]}$
77. The function of salt bridge in galvanic cell is?  
 A) To prevent accumulation of uions in tow half  
 B) To block flow of ions between tow half

- C) To add salt ions in two half  
D) None of these
78. In the reaction  $6\text{NaOH} + 3\text{Cl} \rightarrow 5\text{NaCl} + \text{H}_2\text{O} + \text{NaClO}_3$ , Chlorine is?  
A) Oxidized  
B) Both  
C) Reduced  
D) None
79. Tetrahedral lead added to petrol act as?  
A) Auto catalyst  
B) Inhibitor  
C) Activator  
D) All of these
80. The statement regarding effect of catalyst on a reversible reaction is?  
A) To increase equilibrium constant for forward reaction  
B) To increase yield of product in equilibrium  
C) To increase the rate constant for both reactions  
D) To increase the rate of only forward reaction.
81. In the reaction between chlorine and U.V the propagation step is?  
A)  $\text{CH}_4 + \text{Cl}^\bullet \rightarrow \text{CH}_3^\bullet + \text{HCl}$   
B)  $\text{CH}_4 + \text{Cl}^\bullet \rightarrow \text{CH}_3\text{Cl} + \text{H}^\bullet$   
C)  $\text{CH}_4 + \text{Cl}^\bullet \rightarrow \text{CH}_3\text{Cl}$   
D)  $\text{H}^\bullet + \text{Cl}_2 \rightarrow \text{Cl} + \text{HCl}$
82. How many isomers are possible for  $\text{C}_2\text{H}_2\text{Cl}_2$ ?  
A) 1  
B) 2  
C) 3  
D) 4
83. The reaction  $\text{CH}_3\text{Br} + \text{OH}^- \rightarrow \text{CH}_3\text{OH} + \text{Br}^-$  – is best described by?  
A) Electrophili substitution  
B) Nucleophilic substitution bimolecular  
C) Nucleopilic substitution unimolecular  
D) Addition reaction
84. The common reagent used in oxidation of alcohols is?  
A)  $\text{K}_2\text{Cr}_2\text{O}_7$   
B)  $\text{H}_2\text{SO}_4$   
C)  $\text{K}_2\text{CrO}_4 + \text{H}_2\text{SO}_4$   
D)  $\text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4$
85. Complete reduction of acids to alkanes is carried out with?  
A) Hydrogen iodide  
B) Red phosphorous  
C) Lithium ammonium hydride  
D) Both B and C
86. Which of the following oxide is unlikely to be dissolved in sodium hydroxide?  
A)  $\text{Al}_2\text{O}_3$   
B)  $\text{MgO}$   
C)  $\text{SiO}_2$   
D)  $\text{NO}_2$
87. Which statement about oxygen and sulphur is not correct?  
A) Both have same outer electronic configuration  
B) Both are typical non metals  
C) Both help in combustion  
D) Both exhibit allotropic forms
88. Which of the following is used as dehydrating agent for drying gases?  
A) Phosphoric acid  
B) Carboxylic acid  
C) Sulphuric acid  
D) Nitric acid
89. Which of the following product is obtained when chlorine bubbled less hot concentrate aqueous sodium hydroxide?  
A)  $\text{NaCl}$ ,  $\text{NaClO}_3$  and  $\text{H}_2\text{O}$   
B)  $\text{NaClO}$  and  $\text{H}_2\text{O}$   
C)  $\text{NaCl}$ ,  $\text{NaClO}$  and  $\text{H}_2\text{O}$   
D)  $\text{NaClO}_3$  and  $\text{H}_2\text{O}$
90. A crystalline solid that is used for preparation of yellow oil color due to its solubility is?  
A)  $\text{K}_2\text{MnO}_4$   
B)  $\text{PbCrO}_4$   
C)  $\text{Al}_3(\text{SO}_4)_3$   
D) None

English

91. The passage primarily discusses the pipeline's:  
 A) Operating costs  
 B) Employees  
 C) Consumers  
 D) Construction
92. The word "it" in the line 4 refers to:  
 A) Pipeline  
 B) Ocean  
 C) State  
 D) Villiage
93. According to the passage, 84 million gallons of oil can travel through the pipeline each:  
 A) Day  
 B) Week  
 C) Month  
 D) Year
94. The phrase "Resting on" in the line 13 is closet in meaning to:  
 A) Consisting of  
 B) Supported by  
 C) Passing under  
 D) Protected with
95. The author mentions all of the following as important in determining the pipeline's route except the:  
 A) Climate  
 B) Local vegetation  
 C) Lay of the land  
 D) Kind of soil and rock
96. The word "undertaken" in line 26 is closet in meaning to:  
 A) Removed  
 B) Transported  
 C) Selected  
 D) Attempted
97. How many companies shared the costs of contracting the pipeline?  
 A) 3  
 B) 4  
 C) 8  
 D) 12
98. The word "particular" in line 29 is closest in meaning to:  
 A) Peculiar  
 B) Specific  
 C) Exceptional  
 D) Equal
99. Which of the following determined what percentage of the construction costs each member of the consortium would pay?  
 A) How much oil field land each company owned  
 B) How long each company had owned land in the oil field  
 C) How many people worked for each company  
 D) How many oil wells were located on the company's land
100. Which term is used for an earth covering that always remains frozen?  
 A) Permafrost  
 B) Overcrowded  
 C) Terrian  
 D) Bents