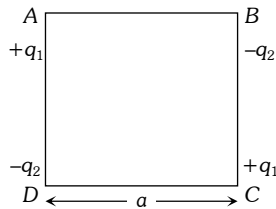# Science (Physics + Chemistry)

1. Which types of losses do not occur in the transformer ?
   (a) Iron losses
   (b) Copper losses
   (c) Mechanical losses
   (d) Flux leakage

Sol. (c)

2. Charges are placed at corners of a square of side 'a' as shown in the following figure. The charge A is in equilibrium. The ratio $\dfrac{q_1}{q_2}$ is

   (a) 1
   (b) $\sqrt{2}$
   (c) $\dfrac{1}{2}$
   (d) $2\sqrt{2}$

Sol. (d)

3. A particle of mass m is tied to one end of a string of length l and rotated through the other end along a horizontal circular path with speed v. The work done in half horizontal circle is

   (a) Zero
   (b) $\left(\dfrac{mv^2}{l}\right).2\pi l$
   (c) $\left(\dfrac{mv^2}{l}\right)\pi l$
   (d) $\left(\dfrac{mv^2}{l}\right)l$

Sol. (a)

4. Which of the following statement is correct ?
   (a) Electric field is zero on the surface of current carrying wire
   (b) Electric field is non-zero on the axis of hollow current carrying wire.
   (c) Surface integral of magnetic field for any closed surface is equal to μ_0 times of total algebraic sum of current which are crossing through the closed surface.
   (d) None

Sol. (d)

5. Which one is correct about fission ?
   (a) Approx. 0.1% mass converts into energy
   (b) Most of energy of fission is in the form of heat
   (c) In a fission of U^{235} about 200 eV energy is released
   (d) On an average, on neutron is released per fission of U^{235}

Sol. (a)

6. In Huygens's wave theory, the locus of all points in the same state of vibration is called
   (a) A half period zone
   (b) Oscillator
   (c) A wave-front
   (d) A ray

Sol. (c)

7. Flux coming out from a unit positive charge enclosed in air is
   (a) ϵ_0
   (b) $(\epsilon_0)^{-1}$
   (c) $(4\pi\,\epsilon_0)^{-1}$
   (d) $4\pi\,\epsilon_0$

Sol. (b)

8. The end A of a rod AB of length 1 m is maintained at 100°C and the end B at 10 °C. The temperature at a distance of 60 cm from the end B is
   (a) 64 °C
   (b) 36 °C
   (c) 46 °C
   (d) 72 °C

Sol. (a)

9. A drop of oil is placed on the surface of water then it will spread as a thin layer because
   (a) Surface tension tends to give the oil a spherical surface
   (b) Surface tension of water is greater than that of oil
   (c) Both oil and water have nearly equal surface tension
   (d) Oil is lighter than water

Sol. (b)

10. In the following ray diagram the maximum value of angle i for which the light suffers total internal reflection at vertical surface will be

   (a) $\sin^{-1}\left(\dfrac{1}{3}\right)$
   (b) $\sin^{-1}\left(\dfrac{3}{4}\right)$
   (c) $\sin^{-1}\left(\dfrac{4}{5}\right)$
   (d) $\sin^{-1}\left(\dfrac{2}{3}\right)$
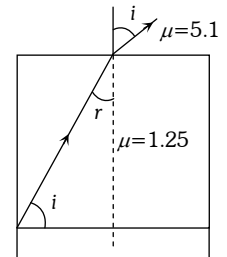
Sol. (Diagram Wrong)

11. The ratio of electric field and potential (E/V) at midpoint of electric dipole, for which separation is l

   (a) $\dfrac{1}{l}$
   (b) l
   (c) $\dfrac{2}{l}$
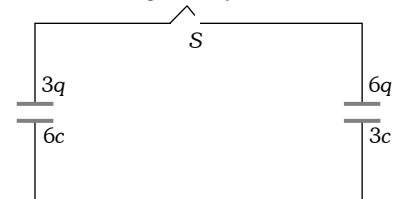   (d) None

Sol. (d)

12. A reverse biased diode is
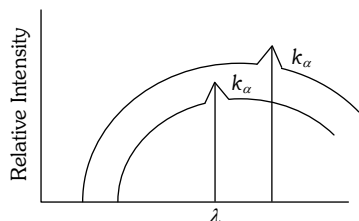   (a)
   (b)
   (c)
   (d)

Sol. (a)

13. In given circuit when switch S has been closed then charge on capacitor A & B respectively

   (a) 3 q, 6 q
   (b) 6 q, 3 q
   (c) 4.5 q, 4.5 q
   (d) 5 q, 4 q

Sol. (b)

14. When two different materials A and B having atomic number z_1 and z_2 are used as the target in Coolidge r-ray tube at different operating voltage V_1 and V_2 respectively their spectrums are found as below.

The correct relations is

(a) $V_1 > V_2$ and $z_1 > z_2$ (b) $V_1 < V_2$ and $z_1 < z_2$

(c) $V_1 < V_2$ and $z_1 > z_2$ (d) $V_1 > V_2$ and $z_1 < z_2$

Sol. (d)

15. A nuclear fusion reaction is given $_1H^2 +_1 H^2 \rightarrow_2 He^3 +_0 n^1 + Q$ (energy). If 2 mole of deuterium are fused then total released energy is

(a) $2Q$ (b) $4Q$

(c) $Q \times 6.02 \times 10^{23}$ (d) $Q \times 2 \times 6 \times 10^{23}$

Sol. (c)

16. In Davisson-Germer experiment maximum intensity is observed at

(a) $50°$ and $54\,Volt$ (b) $54°$ and $50\,Volt$

(c) $50°$ and $50\,Volt$ (d) $65°$ and $50\,Volt$

Sol. (a)

17. the focal length of a simple convex lens used as a magnifier is 10 cm. For the image to be formed at a distance of distinct vision (D=25 cm), the object must be placed away from the lends at a distance of

(a) 0.5 cm   (b) 7.14 cm

(c) 7.20 cm   (d) 16.16 cm

Sol. (b)

18. Doppler phenomena is related with

(a) Pitch (Frequency)   (b) Loudness

(c) Quality   (d) Reflection

Sol. (a)

19. Out of following, incorrect statement is

(a) In Melde's experiment "P²T" remain constant. (P=Loop, T=Tension)

(b) In Kundt's experiment distance between two heaps of powder is $\lambda / 2$.

(c) Quinckeey's tube experiment related with beats

(d) Echo phenomena related with reflection of sound

Sol. (c)

20. The root mean square velocity of gas molecules at 27°C is 1365 m/s. The gas is

(a) O_2 (b) He

(c) N_2 (d) CO_2

Sol. (b)

21. Streamline flow is more likely for liquids with

(a) High density and low viscosity

(b) Low density and high viscosity

(c) High density and high viscosity

(d) Low density and low viscosity

Sol. (b)

22. A radioactive element A decay into stable element B, initially a fresh sample of A is available. In this sample variation in number of nuclei of B with time is shown by
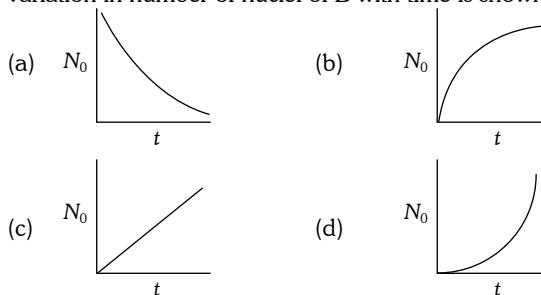
Sol. (b)

23. The Young's decibel slit experiment is performed with blue and with green light of wavelength 4360 Å and 5460 Å respectively. If X is distance of 4th maximum from the central one then

(a) X (blue) = X (green)   (b) X (blue) > X (green)

(c) X (blue) < X (green)   (d) $\dfrac{X\ (blue)}{X\ (green)} = \dfrac{5490}{4360}$.

Sol. (c)

24. Two large metal plates are placed parallel to each other. The inner surfaces of plates are charged by $+\sigma$ and $-\sigma$ (Coulomb/m²). The outer surfaces are neutral. The electric field is …… in the region between the plates and ……. outside the plates.

(a) $\dfrac{2\sigma}{\in_0}, \dfrac{\sigma}{\in_0}$ (b) $\dfrac{\sigma}{\in_0}$, zero

(c) $\dfrac{2\sigma}{\in_0}$, zero   (d) zero, $\dfrac{2\sigma}{\in_0}$

Sol. (b)

25. In order to increase the sensitivity of galvanometer

(a) The suspension wire should be made stiff

(b) Area of the coil should be reduced

(c) The magnetic field should be increased

(d) The number of turns in the coil should be reduced

Sol. (c)

26. Calculate the value of E, for given circuit, when value of 2 amp current is either flowing in clockwise or anticlockwise direction
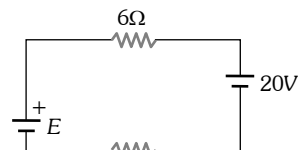
(a) $3\,V, 28\,Volt$ (b) $38\,V, 2\,Volt$

(c) $3\,V, 30\,Volt$ (d) $3\,V, 2.8\,Volt$

Sol. (b)

27. If in a resonance tube a oil of density higher than that of water is used then the resonance frequency would be

(a) Increased   (b) Decreased

(c) Slightly increased   (d) Remained the same

Sol. (d)

28. If wavelength of photon and electron is same then ratio of total energy of electron to total energy of photon would be

(a) $\dfrac{\text{Velocity of electron}}{\text{Light' s speed}}$ (b) $\dfrac{\text{Light' s speed}}{\text{Electron' s speed}}$

(c) $\dfrac{\text{Light' s speed}}{\text{Velocity of electron}}$ (d) $\dfrac{\text{Electron' s speed}}{\text{Light' s speed}}$

Sol. (b)

29. The instantaneous value of current in an A.C. circuit is $I = 2\sin(100\,\pi t + \pi/3)\,A$. The current will be maximum for the first time at

(a) $t = \dfrac{1}{100}\,s$ (b) $t = \dfrac{1}{200}\,s$

(c) $t = \dfrac{1}{400}\,s$ (d) $t = \dfrac{1}{600}\,s$

Sol. (d)

30. The escape velocity of a particle of mass m varies as

(a) m^2 (b) m

(c) m^0 (d) m^{-1}

Sol. (c)

31. Photoelectric effect supports quantum nature of light because

(i) There is minimum frequency of light below which no photoelectrons are emitted

(ii) Electric charge of photoelectrons is quantized

(iii) Maximum kinetic energy of photoelectrons depends only on the frequency of light and not on its intensity

(iv) Even when metal surface is faintly illuminated the photoelectrons leave the surface immediately

(a) (i), (ii), (iii)   (b) (i), (ii), (iv)

(c) (ii), (iii), (iv)   (d) (i), (iii), (iv)

Sol. (d)

32. Select the wrong statement :

(a) Radioactivity is a statistical process

(b) Radioactivity is a spontaneous process

(c) Radioactivity is neutral characteristics of few elements

(d) Radioactive elements cannot be produced in the laboratory

Sol. (d)

33. The magnetic needle of a tangent galvanometer is deflected at angle of 30° due to a current in its coil. The horizontal component of earth's magnetic field is $0.34 \times 10^{-4}\,T$ then magnetic field at the centre of the coil due to current

(a) $1.96 \times 10^{-5}\,T$ (b) $1.96 \times 10^{-4}\,T$

(c) $1.96 \times 10^{4}\,T$ (d) $1.96 \times 10^{5}\,T$
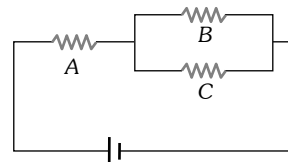
Sol. (a)

34. When gas in a vessel expands, its internal energy decreases. The process involved is

(a) Isothermal   (b) Isobaric

(c) Adiabatic   (d) Isochoric

Sol. (c)

35. Three identical resistances A, B and C are connected as shown in fig.

The heat produced will be maximum

(a) In B (b) In B and C

(c) In A (d) Same for A, B and C

Sol. (c)

36. A $500\,\mu F$ capacitor is charged at a steady rate of $100\,\mu C/\text{second}$. The potential difference across the capacitor will be $10\,V$ after an interval of

(a) 5 sec   (b) 25 sec

(c) 20 sec   (d) 50 sec

Sol. (d)

37. A photon creates a pair of electron-positron with equal kinetic energy. Let kinetic energy of each particle is 0.29 MeV. Then what should be energy of the photon ?

(a) 1.60 MeV   (b) 1.63 MeV

(c) 2.0 MeV   (d) 1.90 MeV

Sol. (a)

38. If $y = 5\sin\left(30\pi\ t - \dfrac{\pi}{7}x + 30°\right)$ $y \to mm$, $t \to$ second, $x \to m$. For given progressive wave equation, phase difference between two vibrating particle having path difference 3.5 m would be

(a) $\pi/4$ (b) π

(c) $\pi/3$ (d) $\pi/2$

Sol. (d)

39. Two cells having the internal resistance $0.2\,\Omega$ and $0.4\,\Omega$ are connected in parallel. The voltage across the battery terminal is 1.5 Volt. The e.m.f. of first cell is 1.2 Volt. The e.m.f. of the second cell is

(a) 2.7 Volt   (b) 2.1 Volt

(c) 3 Volt   (d) 4.2 Volt

Sol. (b)

40. Two particles A and B execute simple harmonic motion of period T and 5T/4. They start from mean position. The phase difference between them when the particle A complete an oscillation will be

(a) $\pi/2$ (b) 0

(c) $2\pi/5$ (d) $\pi/4$

Sol. (c)

41. A particle is projected with velocity V_0 along x-axis. The deceleration on the particle is proportional to the square of the distance from the origin i.e. $a = \alpha x^2$, the distance at which the particle stops is

(a) $\sqrt{\dfrac{3V_0}{2\alpha}}$

(b) $\left(\dfrac{3V_0}{2\alpha}\right)^{\frac{1}{3}}$

(c) $\sqrt{\dfrac{2V_0^2}{3\alpha}}$

(d) $\left(\dfrac{3V_0^2}{2\alpha}\right)^{\frac{1}{3}}$

Sol. (d)

42. When cathode-rays strike a metal target of high melting point with a very high velocity, then which of the following are produced ?

(a) α-rays

(b) X-rays

(c) Ultraviolet rays

(d) Y-waves

Sol. (b)

43. Stationary wave is represented by Y =A sin (100 t) cos (0.01x) where Y and A are in mm, t in sec. and x in m. The velocity of stationary wave is

(a) $1 m/s$

(b) $10^3 m/s$

(c) $10^4 m/s$

(d) Not derivable

Sol. (d)

44. What will be ratio of radii of Li^7 nucleus to Fe^{56} nucleus ?

(a) $1:3$

(b) $1:2$

(c) $1:8$

(d) $2:6$

Sol. (b)

45. What about Gauss theorem is not incorrect ?

(a) It can be derived by using Coulomb's Law

(b) It is valid for conservative field obeys inverse square root law

(c) Gauss theorem is not applicable in gravitation

(d) (A) & (B) both

Sol. (d)

46. A projectile moves from the ground such that its horizontal displacement is $x = Kt$ and vertical displacement is $y = Kt(1 - \alpha t)$, where K and α are constants and t is time. Find out total time of flight (T) and maximum height attained (Y_{max}) its

(a) $T = \alpha, Y_{max} = \dfrac{K}{2\alpha}$

(b) $T = \dfrac{1}{\alpha}, Y_{max} = \dfrac{2K}{\alpha}$

(c) $T = \dfrac{1}{\alpha}, Y_{max} = \dfrac{K}{6\alpha}$

(d) $T = \dfrac{1}{\alpha}, Y_{max} = \dfrac{K}{4\alpha}$

Sol. (d)

47. A particle moves in a circle of radius 30 cm. Its linear speed is given by v=2t where t in second and v in m/s. Find out its radial and tangential acceleration at t=3 sec. respectively,

(a) $220 m/\sec^2, 50 m/\sec^2$

(b) $100 m/\sec^2, 5 m/\sec^2$

(c) $120 m/\sec^2, 2 m/\sec^2$

(d) $110 m/\sec^2, 10 m/\sec^2$

Sol. (c)

48. On which principle does Sonometer works ?

(a) Hooke's Law

(b) Elasticity

(c) Resonance

(d) Newton's Law

Sol. (c)

49. Write Copper, Steel, Glass and Rubber in order of increasing coefficient of elasticity.

(a) Steel, Rubber, Copper Glass

(b) Rubber, Copper, Glass, Steel

(c) Rubber, Glass, Steel, Copper

(d) Rubber, Glass, Copper, Steel

Sol. (d)

50. Writing on black board with a piece of chalk is possible by the property of

(a) Adhesive force

(b) Cohesive force

(c) Surface tension

(d) Viscosity

Sol. (a)

51. Which one of the following statements is not correct ?

(a) $^{14}_{6}C$ is a non-radioactive isotope of carbon.

(b) $^{60}_{27}Co$ is an unstable radioisotope of cobalt.

(c) BF_3 is a Lewis acid

(d) CN^- is a very strong ligand.

Sol. (a)

52. The IUPAC name of $K_4[Ni(CN)_4]$ is

(a) Tetrapotassium tetracyno nickelate (II)

(b) Potassium tetracyno nickel (II)

(c) Potassium tetracyno nickelate (O)

(d) Potassium tetracyno nickelate (II)

Sol. (c)

53. Isotope of uranium used in atomic bomb is

(a) $^{237}_{92}U$

(b) $^{238}_{92}U$

(c) $^{239}_{92}U$

(d) $^{235}_{92}U$

Sol. (d)

54. Which one is an organo-metallic compound in the following

(a) C_2H_5ONa

(b) $C_2H_5 - S - S - C_2H_5$

(c) $Al_2(CH_3)_6$

(d) $Al(C_6H_5S)_3$

Sol. (c)

55. The oxidation state and effective Atomic Number (EAN) of cobalt in $[CoF_6]^{2-}$ are respectively

(a) 3 and 36

(b) 4 and 35

(c) 4 and 37

(d) 2 and 35

Sol. (b)

56. If the disintegration constant of an isotope is $1.237 \times 10^{-4}\ year^{-1}$, then its half-life period will be

(a) 280 years

(b) 560 years

(c) 5600 years

(d) 2800 years

Sol. (c)

57. The reaction $_{13}Al^{27} + _2He^4 \rightarrow _{14}Si^{30} + _1H^1$ is of the type

(a) Nuclear fusion   (b) Nuclear fission

(c) Chemical reaction   (d) Transmutation

Sol. (d)

58. Molarity is expressed as

(a) Litre/mole   (b) Moles/litre

(c) Moles/1000 gms   (d) Grams/litre

Sol. (b)

59. Quartz in an example of

(a) Chain silicate

(b) Sheet silicate

(c) Cyclic silicate

(d) Three dimensional network silicate

Sol. (d)

60. Which of the following metals is extracted by the electro-metallurgical method

(a) Fe (b) Cu

(c) Ni (d) Na

Sol. (d)

61. The IUPAC name of $[Co(NH_3)_6][Cr(C_2O_4)_3]$ is

(a) Hexa-amine cobalt (III) tris (Oxalato) chromium

(b) Hexa-amine cobalt (III) tris (Oxalato) chromate (III)

(c) Hexa-amine cobalt tris (Oxalato) chromium (III)

(d) Hexa-amine cobalt (III) chromium (III) oxalate

Sol. (b)

62. The nucleus of an atom contains

(a) Proton and electron

(b) Neutron and electron

(c) Proton and neutron

(d) Proton, neutron and electron

Sol. (c)

63. $[Ar]3d^{10}4s^1$ electronic configuration belongs to

(a) Ti (b) Tl

(c) Cu (d) V

Sol. (c)

64. Which of the following groups does not have sp^3d hybridization

(a) ClF_3, IF_3, XeF_3^+ (b) ICl_2^-, ClF_2^-, I_3^-

(c) ClF, BrF, IF (d) $PCl_3, AsCl_3, PF_5$

Sol. (d,c)

65. The actual geometry of NO_2^- is

(a) Planar   (b) Linear

(c) V-shape   (d) Tetrahedral

Sol. (c)

66. Which is the strongest Bronsted base among the following

(a) ClO_4^- (b) ClO_3^-

(c) ClO_2^- (d) ClO^-

Sol. (d)

67. Match List-I with List-II. Select the correct answer using the codes given below the list :

List-I	List-II
(Molecule/ion)	(Type of hybridization)
(A) NH_4^+	1. sp^3d^3
(B) PCl_5	2. sp^3d
(C) SF_6	3. sp^3
(D) IF_7	4. sp^3d^2

Answer code :

	A	B	C	D
(a)	3	2	4	1
(b)	1	2	3	4
(c)	2	3	1	4
(d)	4	1	2	3

Sol. (a)

68. In chemical equilibrium, the value of Δn (number of molecules of products number of molecules of reactants) is negative, then the relationship between K_p and K_c will be

(a) $K_p - K_c = 0$ (b) $K_p = K_c(RT)^{+\Delta n}$

(c) $K_p = K_c(RT)^{-\Delta n}$ (d) $K_p = \dfrac{1}{K_c}$

Sol. (b)

69. According to Le-Chatelier's Principle, the addition of temperature to the following reaction :

$CO_{2(gas)} + 2H_2O_{(gas)} \rightarrow CH_{4(gas)} + 2O_{2(gas)}$ will cause it to the right. This reaction is therefore,

(a) Exothermic   (b) Unimolecular

(c) Endothermic   (d) Spontaneous

Sol. (c)

70. Which is not a colligative property in the following

(a) pH of a buffer solution

(b) Boiling point elevation

(c) Freezing point depression

(d) Vapour pressure

Sol. (a,d)

71. Which one of the following salts will produce an alkaline solution on dissolving in water

(a) NH_4Cl (b) Na_2CO_3

(c) $NaNO_3$ (d) Na_2SO_4

Sol. (b)

72. Which one of the following is not a state function

(a) Enthalpy   (b) Entropy

(c) Work   (d) Free energy

Sol. (c)

73. Which is the correct expression, that relates changes of entropy with the change of pressure for an ideal gas at constant temperature in the following

(a) $\Delta S = nRT \ln \frac{P_2}{P_1}$

(b) $\Delta S = T(P_2 - P_1)$

(c) $\Delta S = nR \ln \frac{P_1}{P_2}$

(d) $\Delta S = 2.303 \, nRT \ln \frac{P_1}{P_2}$

Sol. (c)

74. Milk is an example of which of the following

(a) True solution
(b) Gel
(c) Suspension
(d) Emulsion

Sol. (d)

75. The $H \overset{O}{\frown} H$ bond angle in H_2O is 104.5^o. This fact can be best explained with the help of

(a) Valence Shell Electron Pair Repulsion (VSEPR) Theory
(b) Molecular Orbital Theory
(c) Presence of hydrogen bond
(d) Electronegativity difference between hydrogen and oxygen atoms

Sol. (a)

76. The value of 'n' in the reaction :

$Cr_2O_7^{2-} + 14H^+ + nFe^{2+} \rightarrow 2Cr^{3+} + nFe^{3+} + 7H_2O$ will be
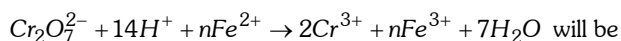
(a) 2
(b) 3
(c) 6
(d) 7

Sol. (c)

77. Which one of the following statements is false

(a) The electron affinity of chlorine is less than that of fluorine.
(b) The electronegativity of fluorine is more than that of chlorine
(c) The electron affinity of bromine is less than that of chlorine
(d) The electronegativity of chlorine is more than that of bromine

Sol. (a)

78. The correct order of increasing electron affinity of halogens is

(a) $F < Cl < Br < I$
(b) $I < Br < F < Cl$
(c) $I > Br < Cl < F$
(d) $Br < I < F < Cl$

Sol. (b)

79. The most electro $+ve$ element in alkali metals is

(a) Na
(b) K
(c) Rb
(d) Cs

Sol. (d)

80. The salts of which alkaline earth metal are used in the form of manure

(a) Mg
(b) Ca
(c) Ba
(d) Sr

Sol. (b)

81. Which of the element of nitrogen family produce maximum number of oxy-acids

(a) N
(b) P
(c) As
(d) Sb

Sol. (b)

82. Which of the following pair has bleaching property

(a) O_3 and NO_2
(b) O_3 and H_2S
(c) SO_2 and Cl_2
(d) Cl_2 and NO_2

Sol. (c)

83. The carbon-carbon bond distance in benzene is

(a) Longer than a $C - C$ single bond
(b) Longer than a $C = C$ double bond
(c) Shorter than a $C = C$ double bond
(d) Shorter than a $C \equiv C$ triple bond

Sol. (b)

84. Thermal decomposition of alkanes in the absence of air is called as

(a) Cracking
(b) Oxidation
(c) Combustion
(d) Hydrogenation

Sol. (a)

85. Ammonical cuprous chloride will give red precipitate with which one of the following

(a) $CH_3 - C \equiv C - CH_3$
(b) $CH_3 - CH = CH_2$
(c) $CH_3 - C \equiv CH$
(d) $CH_3 - CH = CH - CH_3$

Sol. (c)

86. Primary, secondary and tertiary alcohols are distinguished from one another by

(a) Ninhydrin test
(b) Tollen's reagent
(c) Lucas test
(d) Wittig reaction

Sol. (c)

87. Which of the following is not a polymer

(a) Teflon   (b) Petroleum

(c) Cellulose   (d) Natural Rubber

Sol. (b)

88. Which of the following compounds is not of the lipid series

(a) Fat   (b) Soap

(c) Oil   (d) Lard

Sol. (b)

89. Gabriel's synthesis is used frequently for the preparation of which of the following

(a) Primary amines   (b) Primary alcohols

(c) Tertiary amines   (d) Tertiary alcohols

Sol. (a)

90. Which one of the following pairs is the strongest pesticide

(a) Chloroform and benzene hexachloride

(b) D.D.T. and 666

(c) 666 and ether

(d) Isocyanides and alcohol

Sol. (b)

91. Which one of the following compounds will show optical isomerism

(a) $(CH_3)_2 - CH - CH_2 - CH_3$

(b) $CH_3 - CHOH - CH_3$

(c) $CH_3 - CHCl - CH_2 - CH_3$

(d) $CH_3 - CCl_2 - CH_2 - CH_3$

Sol. (c)

92. Which of the element of Oxygen family is most poisonous to human race ?

(a) O   (b) S

(c) Se   (d) None

Sol. (c)

93. The inert gases producing maximum number of compounds are

(a) He and Ne   (b) Ar and Ne
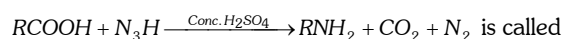
(c) Kr and Ne   (d) Ar and Xe

Sol. (d)

94. Which of the following system is most stable for a chelate ?

(a) Two fused cyclic system

(b) Three fused cyclic system

(c) Four fused cyclic system
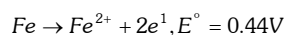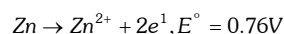
(d) Five fused cyclic system
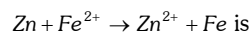
Sol. (d)

95. The reaction

$RCOOH + N_3H \xrightarrow{Conc.H2SO4} RNH_2 + CO_2 + N_2$ is called

(a) Lossen reaction   (b) Schmidt reaction

(c) Curtius reaction   (d) Ullmann reaction

Sol. (b)

96. The standard electrode potentials of the half-cells are given as below :

$Zn \rightarrow Zn^{2+} + 2e^1, E^\circ = 0.76V$

$Fe \rightarrow Fe^{2+} + 2e^1, E^\circ = 0.44V$

The E.M.F. of the cell reaction :

$Zn + Fe^{2+} \rightarrow Zn^{2+} + Fe$ is

(a) –0.32 V   (b) + 0.32 V

(c) +1.20 V   (d) –1.20 V

Sol. (b)

97. Which of the following is a Lewis acid ?

(a) Cl^- (b) H_3O^+

(c) PF_3 (d) C_2H_5OH

Sol. (c)

98. Which one of the following radioactive isotope is used in the treatment of blood cancer ?

(a) P^{32} (b) I^{131}

(c) Co^{60} (d) Na^{24}

Sol. (c)

99. Phenol on heating with CCl_4 and alcoholic KOH, gives salicylic acid. This reaction is

(a) Friedal-Craft reaction

(b) Diels-Alder reaction

(c) Riemer-Tieman eaction

(d) Witting reaction

Sol. (c)

100. Aluminium metal is refined by

(a) Serpeck's process   (b) Baeyer's process

(c) Hall's process   (d) Hoope's process

Sol. (d)