

UP-CPMT - 2006

Paper-2

Physics

1. Which of the following expressions is that of a simple harmonic progressive wave ?
 - 1) $a \sin \omega t$
 - 2) $a \sin (\omega t) \cos kx$
 - 3) $a \sin (\omega t - kx)$
 - 4) $a \cos kx$
2. A spaceman in training is rotated in a seat at the end of a horizontal arm of length 5m. If he can withstand accelerations upto $9g$, then what is the maximum number of revolutions per second permissible ? (Take $g = 10 \text{ m/s}^2$)
 - 1) 14.5 rps
 - 2) 1.45 rps
 - 3) 0.675 rps
 - 4) 6.75 rps
3. The electric current passes through a metallic wire produces heat because of :
 - 1) collisions of conduction electrons with each other
 - 2) collisions of the atoms of the metal with each other
 - 3) the energy released in the ionization of the atoms of the metal
 - 4) collisions of the conduction electrons with the atoms of the metallic wire
4. The root mean square and most probable speed of the molecules in a gas are :
 - 1) same
 - 2) different
 - 3) cannot say
 - 4) depends on nature of the gas
5. A ball is thrown up at an angle with the horizontal. Then the total change of momentum by the instant it returns to ground is :
 - 1) acceleration due to gravity \times total time of flight
 - 2) weight of the ball \times half the time of flight
 - 3) weight of the ball \times total time of flight
 - 4) weight of the ball \times horizontal range
6. Two balloons are filled, one with pure He gas and the other by air, respectively. If the pressure and temperature of these balloons are same then the number of molecules per

unit volume is :

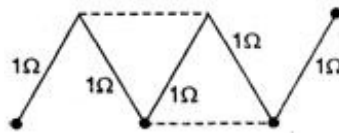
- 1) more in the He filled balloon
- 2) same in both balloons
- 3) more in air filled balloon
- 4) in the ratio of 1 : 4

7. In the propagation of light waves, the angle between the direction of vibration and plane of polarisation is :

- 1) 0°
- 2) 30°
- 3) 60°
- 4) 90°

8. A circuit consists of five identical conductors as shown in figure. The two similar conductors are added as indicated by dotted lines.

The ratio of resistances before and after addition will be :



- 1) $5/6$
- 2) $3/5$
- 3) $5/3$
- 4) $6/5$

9. When a p-n junction diode is reverse biased, then:

- 1) no current flows
- 2) the depletion region is increased
- 3) the depletion region is reduced
- 4) the height of the potential barrier is reduced

10. If the electric flux entering and leaving an enclosed surface respectively are ϕ_1 and ϕ_2 , the electric charge inside the surface will be :

- 1) $(\phi_2 - \phi_1)/\epsilon_0$
- 2) $(\phi_1 + \phi_2)/\epsilon_0$
- 3) $(\phi_1 - \phi_2)/\epsilon_0$
- 4) $\epsilon_0(\phi_1 + \phi_2)$

11. For two resistance wires joined in parallel, the resultant resistance is $(6/5)\Omega$. When one of the resistance wires breaks the effective resistance becomes 3Ω . The resistance of the broken wire is :

- 1) 5Ω
- 2) 4Ω
- 3) $(6/5)\Omega$
- 4) 3Ω

12. During the melting of a slab of ice at 273 K at atmospheric pressure :

- 1) positive work is done by the ice water system on the atmosphere
- 2) positive work is done on the ice water system by the atmosphere

- 3) internal energy of ice water system decreases
4) none of the above
13. An engine pumps up 100 kg of water through a height of 10 m in 5s. Given that the efficiency of engine is 60%. If $g = 10 \text{ ms}^{-2}$, the power of the engine is :
- 1) 3.3 kW
 - 2) 30.3 kW
 - 3) 0.33 kW
 - 4) 0.22 kW
14. At what speed, the velocity head of water is equal to pressure head of 40 cm of Hg ?
- 1) 10.3 m/s
 - 2) 8.3 m/s
 - 3) 9.3 m/s
 - 4) 11.3 m/s
15. The operation of a nuclear reactor is said to be critical, if the multiplication factor (k) has a value :
- 1) 1
 - 2) 1.2
 - 3) 2.4
 - 4) 3.2
16. The sum of two vectors \vec{A} and \vec{B} is at right angles to their difference. Then :
- 1) $A = B$
 - 2) $A = 2B$
 - 3) $B = 2A$
 - 4) \vec{A} and \vec{B} have the same direction
17. For inelastic collision between two spherical rigid bodies :
- 1) the total kinetic energy is conserved
 - 2) the linear momentum is not conserved
 - 3) the total mechanical energy is not conserved
 - 4) the linear momentum is conserved
18. A microscope is focussed on a mark on a piece of paper and then a slab of glass of thickness 3 cm and refractive index 1.5 is placed over the mark. How should the microscope be moved to get the mark again in focus ?
- 1) 4 cm upward
 - 2) 1 cm upward
 - 3) 3 cm downward
 - 4) 1 cm downward

19. The height y and the distance x along the horizontal plane of a projectile on a certain planet (with no surrounding atmosphere) are given by $y = (8t - 5t^2)$ metre and $x = 6t$ metre where t is in seconds. The velocity of projection is :
- 1) 4 m/s
 - 2) 5 m/s
 - 3) 10 m/s
 - 4) Not obtained from the data
20. During an adiabatic process, the pressure of a gas is found to be proportional to the cube of its absolute temperature. The ratio C_P/C_V for the gas is :
- 1) $2/3$
 - 2) 4
 - 3) $5/4$
 - 4) $3/2$
21. The angular amplitude of a simple pendulum is θ_0 . The maximum tension in its string will be :
- 1) $mg (1 - \theta_0)$
 - 2) $mg (1 + \theta_0)$
 - 3) $mg (1 - \theta_0^2)$
 - 4) $mg (1 + \theta_0^2)$
22. An electric fan is switched on in a closed room. The air in the room is :
- 1) cooled
 - 2) heated
 - 3) maintains its temperature
 - 4) heated or cooled depending on the atmospheric pressure
23. The ionisation energy of 10 times ionised sodium atom is :
- 1) $(13.6/11)eV$
 - 2) $(13.6/22)eV$
 - 3) $13.6 \times (11)^2eV$
 - 4) 13.6 eV
24. When you make ice cubes, the entropy of water :
- 1) does not change
 - 2) increases
 - 3) decreases
 - 4) may either increase or decrease depending on the process used

25. Two parallel large thin metal sheets have equal surface charge densities ($\sigma = 26.4 \times 10^{-12} \text{ C/m}^2$) of opposite signs. The electric field between these sheets is :

- 1) 15 N/C
- 2) 3×10^{-10} N/C
- 3) 3 N/C
- 4) 6×10^{-10} N/C

26. In refraction, light waves are bent on passing from one medium to the second medium, because in the second medium :

- 1) the frequency is different
- 2) the coefficient of elasticity is different
- 3) the speed is different
- 4) the amplitude is smaller

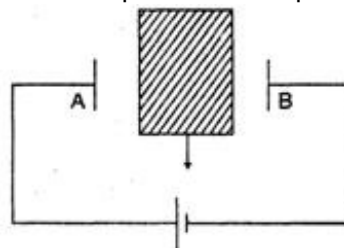
27. Two stones are projected with the same speed but making different angles with the horizontal. Their horizontal ranges are equal. The angle of projection of one is $\pi/3$ and the maximum height reached by it is 102 metres. Then the maximum height reached by the other in metres is :

- 1) 340
- 2) 220
- 3) 80
- 4) 34

28. Electromagnetic waves with frequencies greater than the critical frequency of ionosphere cannot be used for communication using sky wave propagation, because :

- 1) the refractive index of the ionosphere becomes very high for $f > f_c$
- 2) the refractive index of the ionosphere becomes very low for $f > f_c$
- 3) the refractive index of the ionosphere becomes very high for $f < f_c$
- 4) none of the above

29. An insulator plate is passed between the plates of a capacitor. Then current :



- 1) first flows from A to B and then from B to A
- 2) first flows from B to A and then from A to B
- 3) always flows from B to A
- 4) always flows from A to B

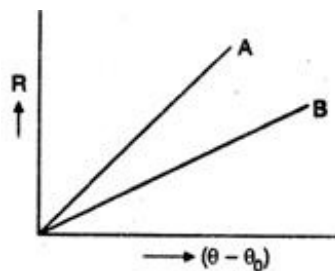
30. A hole is in the bottom of the tank having water. If total pressure at the bottom is 3 atm ($1 \text{ atm} = 10^5 \text{ Nm}^{-2}$), then velocity of water flowing from hole is :

- 1) $\sqrt{400} \text{ ms}^{-1}$
- 2) $\sqrt{200} \text{ ms}^{-1}$
- 3) $\sqrt{80} \text{ ms}^{-1}$
- 4) None of these

31. If $E = \text{energy}$, $G = \text{gravitational constant}$, $I = \text{impulse}$ and $M = \text{mass}$, then dimensions of (GIM^2/E^2) are same as that of :

- 1) time
- 2) mass
- 3) length
- 4) force

32. Two circular discs A and B with equal radii are blackened. They are heated to same temperature and are cooled under identical conditions. What inference do you draw from their cooling curves ?



- 1) A and B have same specific heats
- 2) specific heat of A is less
- 3) specific heat of B is less
- 4) nothing can be said

33. Time period of a simple pendulum of length l is T_1 and time period of a uniform rod of the same length l pivoted about one end and oscillating in a vertical plane is T_2 . Amplitude of oscillations in both the cases is small. Then T_1/T_2 is :

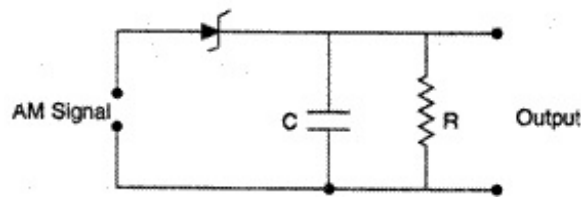
- 1) $1/\sqrt{2}$
- 2) 1
- 3) $1/2$
- 4) $\sqrt{3}/2$

34. Two concentric circular coils of ten turns each are situated in the same plane. Their radii are 20 cm and 40 cm and they carry respectively 0.2 A and 0.3 A currents in opposite direction. The magnetic field in tesla at the centre is :

- 1) $17 \mu_0/4$
- 2) $\mu_0/70$
- 3) $7 \mu_0/80$

4) $5 \mu_0/4$

35. Given below is a circuit diagram of an AM demodulator.



For good demodulation of AM signal of carrier frequency f , the value of RC should be :

- 1) $RC = 1/f$
- 2) $RC < 1/f$
- 3) $RC \geq 1/f$
- 4) $RC \gg 1/f$

36. How should people wearing spectacles work with a microscope ?

- 1) They should keep on wearing their spectacles
- 2) They should take off their spectacles
- 3) They may keep on wearing or take off their spectacles, it makes no difference
- 4) They cannot use a microscope at all

37. A point source emits sound equally in all directions in a non-absorbing medium. Two points P and Q are at distances of 2 m and 3 m respectively from the source. The ratio of the intensities of the waves at P and Q is :

- 1) 9 : 4
- 2) 1 : 3
- 3) 3 : 1
- 4) 4 : 9

38. In a choke coil, the reactance X_L and resistance R are such that :

- 1) $X_L = R$
- 2) $X_L \gg R$
- 3) $X_L \ll R$
- 4) $X_L = \infty$

39. The distance between two successive atomic planes of a calcite crystal is 0.3 nm. The minimum angle for Bragg scattering of 0.3 \AA X-rays will be :

- 1) 1.43°
- 2) 2.56°
- 3) 2.86°
- 4) 45°

40. A point initially at rest moves along x-axis. Its acceleration varies with time as $a = (6t + 5)$

m/s^2 . If it starts from origin, the distance covered in 2 s is :

- 1) 9 m 2) 18 m 3) 81 m 4) 90 m

41. An object is kept on a smooth inclined plane of 1 in l . The horizontal acceleration to be imparted to the inclined plane so that the object is stationary relative to incline is :

- 1) $g\sqrt{l^2 - 1}$
2) $g(l^2 - 1)$
3) $g/(\sqrt{l^2 - 1})$
4) $g/(l^2 - 1)$

42. When a spring is stretched by a distance x , it exerts a force, given by :

$$F = (-5x - 16x^3) \text{ N}$$

The work done, when the spring is stretched from 0.1 m to 0.2 m is :

- 1) $8.7 \times 10^{-2} \text{ J}$
2) $8.2 \times 10^{-2} \text{ J}$
3) $8.7 \times 10^{-1} \text{ J}$
4) $9.2 \times 10^{-1} \text{ J}$

43. Which one of the following is a possible nuclear reaction ?

- 1) $^{10}\text{B}_5 + ^4\text{He}_2 \rightarrow ^{13}\text{N}_7 + ^1\text{H}_1$
2) $^{23}\text{Na}_{11} + ^1\text{H}_1 \rightarrow ^{20}\text{Ne}_{10} + ^4\text{He}_2$
3) $^{239}\text{Np}_{93} \rightarrow ^{239}\text{Pu}_{94} + \beta^- + \bar{\nu}$
4) $^{11}\text{N}_7 + ^1\text{H}_1 \rightarrow ^{12}\text{C}_6 + \beta^- + \nu$

44. A light emitting diode (LED) has a voltage drop of 2 volt across it and passes a current of 10 mA. When it operates with a 6 volt battery through a limiting resistor R, the value of R is :

- 1) 40 $\text{k}\Omega$
2) 20 $\text{k}\Omega$
3) 2 Ω
4) 400 Ω

45. An electron and proton enter a magnetic field perpendicularly. Both have same kinetic energy. Which of the following is true ?

- 1) Trajectory of electron is less curved
2) Trajectory of proton is less curved
3) Both trajectories are equally curved
4) Both move on straight line path

46. A solid sphere rolls down two different inclined planes of same height, but of different

inclinations. In both cases :

- 1) speed and time of descent will be same
- 2) speed will be same, but time of descent will be different
- 3) speed will be different, but time of descent will be same
- 4) speed and time of descent both are different

47. n α -particles per second are being emitted by N atoms of a radioactive element. The half-life of element will be :

- 1) $(0.1n/N)$ s
- 2) (N/n) s
- 3) $(0.693N/n)$ s
- 4) $(0.693n/N)$ s

48. The minimum potential difference between the base and emitter required to switch a silicon transistor 'ON' is approximately :

- 1) 1 V
- 2) 2 V
- 3) 4 V
- 4) 4.8 V

49. In an L-R circuit, time constant is that time in which current grows from zero to the value : where I_0 is steady state current.

- 1) $0.63 I_0$
- 2) $0.53 I_0$
- 3) $0.54 I_0$
- 4) I_0

50. A cosmonaut is orbiting earth in a space craft at an altitude $h = 630$ km with a speed of 8 km/s. If the radius of the earth is 6370 km, the acceleration of the cosmonaut is :

- 1) 9.10 m/s^2
- 2) 9.50 m/s^2
- 3) 12.0 m/s^2
- 4) 9.88 m/s^2

Chemistry

51. 1 mole of H_2 and 2 moles of I_2 are taken initially in a 2 litre vessel. The number of moles of H_2 at equilibrium is 0.2. Then the number of moles of I_2 and HI at equilibrium are :

- 1) 1.2, 1.6
- 2) 2.4, 1.0
- 3) 4.8, 2.4
- 4) 0.8, 2.0

52. The compressibility of a gas is less than unity at STP. Therefore,

- 1) $V_m > 22.4L$
- 2) $V_m < 22.4 L$
- 3) $V_m = 22.4L$
- 4) $V_m = 44.8 L$

53. PCl_5 is possible but NCl_5 does not exist :

- 1) in N, d-sub-shell is absent
- 2) ionization energy of N is very high
- 3) it does not like Cl
- 4) none of the above

54. $3A \rightarrow 2B$ rate of reaction ($+d[B]/dt$) is equal to :

- 1) $-(3/2)(d[A]/dt)$
- 2) $-(2/3)(d[A]/dt)$
- 3) $-(1/3)(d[A]/dt)$
- 4) $+2 (d[A]/dt)$

55. Blue vitriol is :

- 1) $MgSO_4 \cdot 5H_2O$
- 2) $CuSO_4 \cdot 5H_2O$
- 3) $CaSO_4 \cdot 5H_2O$
- 4) $ZnSO_4 \cdot 5H_2O$

56. Which of the following oxide of nitrogen is most thermally stable ?

- 1) N_2O_5
- 2) N_2O
- 3) NO
- 4) N_2O_3

57. For prevention of rusting to iron, paints of which is used ?

- 1) PbO
- 2) PbO_2
- 3) Pb_3O_4
- 4) $PbSO_4$

58. Glucose reacts with excess of phenyl hydrazine and forms :

- 1) glucosazone
- 2) glucose phenyl hydrazine

- 3) glucose-oxime
- 4) sorbitol

59. Which of the following gas is used in warfare ?

- 1) N_2O
- 2) $CCl_3 \cdot NO_2$
- 3) CO_2
- 4) O_2

60. 1.520 g of hydroxide of a metal on ignition gave 0.995 g of oxide. The equivalent weight of metal is :

- 1) 3.52
- 2) 0.885
- 3) 230
- 4) 9

61. Natural rubber is a polymer of :

- 1) styrene
- 2) chloroprene
- 3) $\begin{array}{c} CH_2 = C - CH = CH_2 \\ | \\ CH_3 \end{array}$
- 4) 1, 3 butadiene

62. Number of atoms of He in 100 amu of He (atomic wt. of He is 4) are :

- 1) 25
- 2) 50
- 3) 75
- 4) $100 \times 6 \times 10^{-23}$

63. When C_2H_2 , CH_4 and C_2H_4 passes through a test tube which have ammoniacal Cu_2Cl_2 , find out which gas comes out unaffected from test tube ?

- 1) C_2H_2 and CH_4
- 2) C_2H_2 and C_2H_4
- 3) C_2H_4 and CH_4
- 4) C_2H_2

64. Which has least gold number ?

- 1) Gelatin
- 2) Starch
- 3) Albumin
- 4) Blood

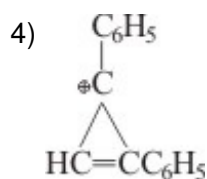
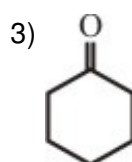
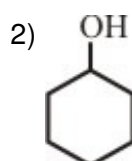
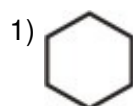
65. Radius of Ga is less than Al because of :
- 1) lanthenoid contraction
 - 2) greater screening effect
 - 3) inert pair effect
 - 4) none of the above
66. Find out emf of cell,
Zn; Zn²⁺ (1M) || Cu²⁺ (1M); Cu E° for
Zn²⁺/Zn = - 0.76; E° for Cu²⁺ /Cu = + 0.34 :
- 1) + 1.10 V
 - 2) -1.10 V
 - 3) 0.34 V
 - 4) - 0.34 V
67. Which of the following is act as pickling agent :
- 1) HNO₃
 - 2) HCl
 - 3) H₂SO₄
 - 4) HNO₂
68. Which is purified by steam distillation :
- 1) Aniline
 - 2) Benzoic Acid
 - 3) Petroleum
 - 4) Naphthalene
69. Which does not replace hydrogen from HCl ?
- 1) Cu 2) Mg 3) Na 4) Al
70. If a mixture of CO and N₂ in equal amount have total 1 atm pressure, find out partial pressure of N₂ in mixture.
- 1) 1 atm
 - 2) 0.50 atm
 - 3) 2 atm
 - 4) 4 atm
71. When hydrogen molecules decomposed into it's atoms which conditions gives maximum yields of H atoms ?
- 1) High temperature and low pressure
 - 2) Low temperature and high pressure

- 3) High temperature and high pressure
- 4) Low temperature and low pressure

72. ${}_{11}\text{Na}^{23}$ is formed from ${}_{11}\text{N}^{24}$ by the :

- 1) ${}^0_1\text{n}$ emission
- 2) β -emission
- 3) K-electron capture
- 4) α -emission

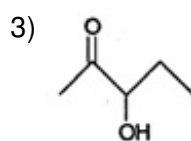
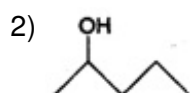
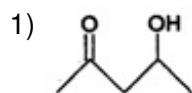
73. Which compound is aromatic ?

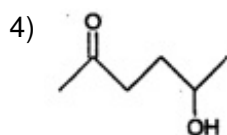


74. Which of the following gas is used in artificial respiration ?

- 1) O_2
- 2) CO_2
- 3) Helium
- 4) All of these

75. Which one of the following will most readily be dehydrated in acidic conditions ?





76. A violet colour compound is forms in detection of 'S' in a compound :

- 1) $\text{Na}_4[\text{Fe}(\text{CN})_5\text{NOS}]$
- 2) $\text{Na}_3[\text{Fe}(\text{CN})_5\text{NOS}]$
- 3) $\text{Na}_2[\text{Fe}(\text{CN})_5\text{NOS}]$
- 4) $\text{Na}_2[\text{Fe}(\text{CN})_5\text{NO}]$

77. In a closed insulated container, a liquid is stirred with a paddle to increase the temperature. Which of the following is true ?

- 1) $\Delta E = W \neq 0, q = 0$
- 2) $\Delta E = W = 0, q \neq 0$
- 3) $\Delta E = 0, W = q \neq 0$
- 4) $W = 0, \Delta E = q \neq 0$

78. Acetone on distillation with conc. H_2SO_4 forms :

- 1) phorone
- 2) acrolein
- 3) mesitylene
- 4) mesityl oxide

79. An alkyl halide by formation of its Grignard reagent and heating with water yields propane. What is the original alkyl halide ?

- 1) Methyl iodide
- 2) Ethyl iodide
- 3) Ethyl bromide
- 4) Propyl bromide

80. Degree of dissociation of 0.1 N CH_3COOH is ($K_{\text{acid}} = 1 \times 10^{-5}$) :

- 1) 10^{-6}
- 2) 10^{-1}
- 3) 10^{-3}
- 4) 10^{-2}

81. The following data are for the decomposition of ammonium nitrite in aqueous solution :

Vol. of N_2 in cc	Time (min)
6.25	10
9.00	15

11.40	20
13.65	25
35.65	Infinity

The order of reaction is :

- 1) zero
- 2) one
- 3) two
- 4) Four

82. Bleaching action of CaOCl_2 is due to :

- 1) nascent oxygen
- 2) chlorine
- 3) HClO
- 4) HCl

83. Indane is :

- 1) commercial butane, isobutane and propane mixture
- 2) butane, ethane mixture
- 3) commercial propane
- 4) methane, propane mixture

84. In compound C, H and N are present in 9 : 1 : 3.5 by weight. If molecular weight of the compound is 108, then the molecular formula of the compound is :

- 1) $\text{C}_2\text{H}_6\text{N}_2$
- 2) $\text{C}_3\text{H}_4\text{N}$
- 3) $\text{C}_6\text{H}_8\text{N}_2$
- 4) $\text{C}_9\text{H}_{12}\text{N}_3$

85. Allyl isocyanide contains σ and π bonds :

- 1) 9σ , 3π
- 2) 9σ , 9π
- 3) 3σ , 4π
- 4) 4σ , 3π

86. Which does not reacts with Fehling solution ?

- 1) CH_3CHO
- 2) $\text{C}_6\text{H}_5\text{CHO}$
- 3) CH_3COCH_3
- 4) Glucose

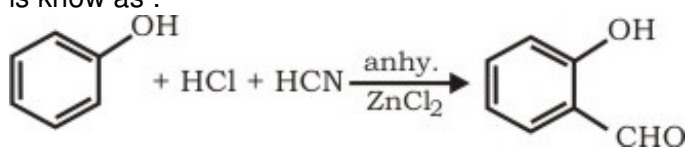
87. Lithophone is :

- 1) $\text{ZnSO}_4 + \text{PbS}$
- 2) $\text{BaSO}_4 + \text{ZnS}$
- 3) PbO_2
- 4) ZnSO_4

88. t-butyl alcohol is :

- 1) 2 methyl propan - 2-ol
- 2) 2 methyl propan - 1-ol
- 3) 3 methyl butan - 1-ol
- 4) 3 methyl butan - 2-ol

89. The following reaction is
is know as :



- 1) Perkin reaction
- 2) Gattermann reaction
- 3) Kolbe reaction
- 4) Gattermann-aldehyde reaction

90. Which of the following is not Lewis acid ?

- 1) $\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$
- 2) AlCl_3
- 3) SnCl_4
- 4) FeCl_3

91. The volume of water to be added to 100 cm^3 of $0.5 \text{ N H}_2\text{SO}_4$ to get decinormal concentration is:

- 1) 400 cm^3
- 2) 425 cm^3
- 3) 475 cm^3
- 4) 525 cm^3

92. Aldehyde with $\text{NH}_2 \cdot \text{NH}_2$ forms :

- 1) hydrazones
- 2) aniline
- 3) nitrobenzene
- 4) none of these

93. The compound in which underlined carbon uses only its sp^3 hybrid orbitals for bond formation is :

- 1) $CH_3\underline{C}OOH$
- 2) $CH_3\underline{C}ONH_2$
- 3) $CH_3\underline{C}H_2OH$
- 4) $CH_3\underline{C}H = CH_2$

94. Which inert gas show abnormal behaviour on liquification ?

- 1) Xe
- 2) He
- 3) Ar
- 4) Kr

95. The total number of possible isomeric trimethyl benzene is :

- 1) 2
- 2) 3
- 3) 5
- 4) 7

96. Optical isomerism shown by :

- 1) propanol - 2
- 2) butanol - 2
- 3) ethanol
- 4) methanol

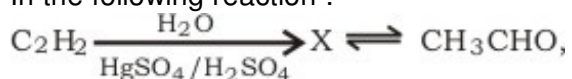
97. van't Hoff factor of $Ca(NO_3)_2$ is :

- 1) one
- 2) two
- 3) three
- 4) four

98. In Arrhenius plot, intercepts is equal to :

- 1) $(-E_a/R)$
- 2) $\ln A$
- 3) $\ln K$
- 4) $\log_{10} a$

99. In the following reaction :



What is X ?

- 1) CH_3CH_2OH
- 2) $CH_3 - O - CH_3$
- 3) CH_3CH_2CHO
- 4) $CH_2 = CHOH$

100. On treatment with ninhydrin which of the following give blue colour ?

- 1) Proteins
- 2) Peptides
- 3) α -amino acids
- 4) All of these

Answer Key

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