



SECTION NAME

Date : 06/03/2024
Time : 3 Hours 0 Minutes

MOCK TEST - 7
Marks : 300

Mathematics

- The value of $\cos^2 \frac{\pi}{12} + \cos^2 \frac{\pi}{4} + \cos^2 \frac{5\pi}{12}$ is
 A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{3+\sqrt{3}}{2}$ D) $\frac{2}{3+\sqrt{3}}$
- If $z^2 + z + 1 = 0$, where z is complex number, then the value of $(z + \frac{1}{z})^2 + (z^2 + \frac{1}{z^2})^2 + (z^3 + \frac{1}{z^3})^2 + \dots + (z^6 + \frac{1}{z^6})^2$ is
 A) 54 B) 6 C) 12 D) 18
- A box contains two white balls, three black balls and four red balls. The number of ways in which three balls can be drawn from the box if atleast one black ball is to be included in the draw, is
 A) 32 B) 64 C) 128 D) None of these
- In the expansion of $(\frac{x}{2} - \frac{3}{x^2})^{10}$, the coefficient of x^4 is
 A) $\frac{405}{256}$ B) $\frac{504}{259}$ C) $\frac{450}{263}$ D) None of these
- If $1, \log_{81}(3^x + 48), \log_9(3^x - \frac{8}{3})$ are in A.P, then the value of x is
 A) 9 B) 6 C) 2 D) 4
- The point (4, 1) undergoes the following three successive transformations
 (A) Reflection about the line $y = x - 1$
 (B) Translation through a distance 1 unit along the positive x -axis
 (C) Rotation through an angle $\frac{\pi}{4}$ about the origin in the anti-clockwise direction.
 Then, the coordinates of the final point are
 A) (4, 3) B) $(\frac{7}{2}, \frac{7}{2})$ C) $(0, 3\sqrt{2})$ D) (3, 4)
- The angle between the tangents drawn from the point (1, 4) to the parabola $y^2 = 4x$ is

- A) $\pi/6$ B) $\pi/4$ C) $\pi/3$ D) $\pi/2$
8. The foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ and the hyperbola $\frac{x^2}{144} - \frac{y^2}{81} = \frac{1}{25}$ coincide. Then the value of b^2 is
- A) 1 B) 5 C) 7 D) 9
9. From any point on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$, tangents are drawn to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 2$. The area cut off by the chord of contact on the asymptotes is equal to
- A) $\frac{ab}{2}$ B) ab C) $2ab$ D) $4ab$
10. Let R be a relation on a set A such that $R = R^{-1}$, then R is
- A) Reflexive B) Symmetric C) Transitive D) None of these
11. $\begin{bmatrix} 2x + y & 4x \\ 5x - 7 & 4x \end{bmatrix} = \begin{bmatrix} 7 & 7y - 13 \\ y & x + 6 \end{bmatrix}$, then the value of $x + y$ is
- A) $x = 3, y = 1$ B) $x = 2, y = 3$ C) $x = 2, y = 4$ D) $x = 3, y = 3$
12. If $f(x) = |\cos x - \sin x|$, then $f'(\frac{\pi}{2})$ is equal to
- A) 1 B) -1 C) 0 D) 2
13. If $\int f(x) dx = \psi(x)$, then $\int x^5 f(x^3) dx$ is equal to
- A) $\frac{1}{3}[x^3\psi(x^3) - \int x^2\psi(x^3)dx] + C$ B) $\frac{1}{3}x^3\psi(x^3) - 3\int x^3\psi(x^3)dx + C$
- C) $\frac{1}{3}x^3\psi(x^3) - \int x^2\psi(x^3)dx + C$ D) $\frac{1}{3}[x^3\psi(x^3) - \int x^3\psi(x^3)dx] + C$
14. The value of $\int_0^{2\pi} \frac{\cos^{2n} x}{\cos^{2n} x + \sin^{2n} x} dx$ is
- A) $\pi/2$ B) π C) 2π D) 4π
15. The area bounded by the circle $x^2 + y^2 = 8$, the parabola $x^2 = 2y$ and the line $y = x$ in $y \geq 0$ is
- A) $\frac{2}{3} + 2\pi$ B) $\frac{2}{3} - 2\pi$ C) $\frac{2}{3} + \pi$ D) $\frac{2}{3} - \pi$
16. The solution of $x^3 \cdot \frac{dy}{dx} + 4x^2 \tan y = e^x \cdot \sec y$ satisfying $x = 1; y = 0$ is
- A) $\tan y = (x - 2)e^x \log x$ B) $\sin y = e^x (x - 1) x^{-4}$ C) $\tan y = (x - 1) e^x x^{-3}$

D) $\sin y = e^x (x - 1) x^{-3}$

17. \mathbf{a} , \mathbf{b} , \mathbf{c} are three vectors, such that $\mathbf{a} + \mathbf{b} + \mathbf{c} = 0$, $|\mathbf{a}| = 1$, $|\mathbf{b}| = 2$, $|\mathbf{c}| = 3$, then $\mathbf{a} \cdot \mathbf{b} + \mathbf{b} \cdot \mathbf{c} + \mathbf{c} \cdot \mathbf{a}$ is equal to

A) 0 B) -7 C) 7 D) 1

18. The angle between two planes $2x - y + z = 6$ and $x + 2y + 3z = 3$ is

A) $\cos^{-1} \left(\frac{1}{2} \sqrt{1/7} \right)$ B) $\cos^{-1} \left(\frac{1}{2} \sqrt{2/7} \right)$ C) $\cos^{-1} \left(\frac{1}{2} \sqrt{3/7} \right)$ D) $\cos^{-1} \left(\frac{1}{2} \sqrt{4/7} \right)$

19. A speaks truth in 60% cases and B speaks truth in 70% cases. The probability that they will say the same thing while describing a single event is

A) 0.56 B) 0.54 C) 0.38 D) 0.94

20.

The minors of -4 and 9 and the co-factors of -4 and 9 in determinant $\begin{vmatrix} -1 & -2 & 3 \\ -4 & -5 & -6 \\ -7 & 8 & 9 \end{vmatrix}$ are

respectively

A) 42, 3; -42, 3 B) -42, -3; 42, -3 C) 42, 3; -42, -3 D) 42, 3; 42, 3

21. If the total number of subsets of a finite set A has 56 more elements than the total number of subsets of another finite set B , then the number of elements in the set A is

22. If $\cos A = \frac{3}{4}$, then $32 \sin \left(\frac{A}{2} \right) \sin \left(\frac{5A}{2} \right) =$

23. The value of $\left(\frac{1+i}{\sqrt{2}} \right)^8 + \left(\frac{1-i}{\sqrt{2}} \right)^8$ is equal to _____

24. $\lim_{x \rightarrow 0} \frac{\log(1+x+x^2) + \log(1-x+x^2)}{\sec x - \cos x}$ is equal to

25. The A.M. of a set of 50 numbers is 38. If two numbers of the set, namely 55 and 45 are discarded, the A.M. of the remaining set of numbers is

26. The number of solutions to the equation $\tan^{-1} \left(\frac{x}{3} \right) + \tan^{-1} \left(\frac{x}{2} \right) = \tan^{-1} x$ is

27. At present, a firm is manufacturing 2000 items. It is estimated that the rate of change of production P w.r.t additional number of workers x is given by $\frac{dP}{dx} = 100 - 12\sqrt{x}$. If the firm employs 25 more workers, then the new level of production of items is

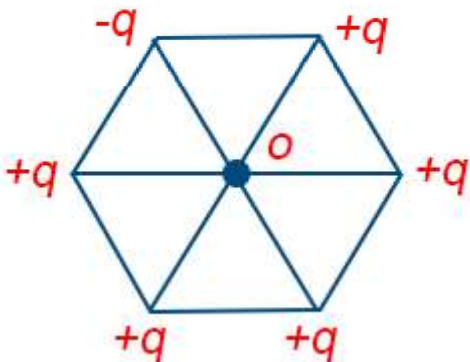
28. If the vectors $\alpha \hat{i} + \hat{j} + \hat{k}$, $\hat{i} + \beta \hat{j} + \hat{k}$ and $\hat{i} + \hat{j} + \gamma \hat{k}$ $\alpha, \beta, \gamma, \neq 1$ are coplanar, then the value of $\frac{1}{1-\alpha} + \frac{1}{1-\beta} + \frac{1}{1-\gamma}$ is

29. If the origin is the centroid of a ΔABC having vertices $A(a, 1, 3)$, $B(-2, b, -5)$ and $C(4, 7, c)$, then $a =$ _____

30. A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then, $P(A \cup B)$ is

Physics

31. The velocity v (in cm/sec) of a particle is given in terms of time t (in sec) by the relation $v = at + \frac{b}{t+c}$; the dimensions of a , b and c are
- A) $a = L^2, b = T, c = LT^2$ B) $a = LT^2, b = LT, c = L$ C) $a = LT^{-2}, b = L, c = T$
- D) $a = L, b = LT, c = T^2$
32. An aeroplane is rising vertically with acceleration f . Two stones are dropped from it at an interval of time t . The distance between them at time t' after the second stone is dropped will be
- A) $\frac{1}{2}(g+f)tt'$ B) $\frac{1}{2}(g+f)(t+2t')t$ C) $\frac{1}{2}(g+f)(t-t')^2$ D) $\frac{1}{2}(g+f)(t+t')^2$
33. A mass of M kg is suspended by a weightless string. The horizontal force that is required to displace it until the string makes an angle of 45° with the initial vertical direction is
- A) $Mg(\sqrt{2}+1)$ B) $Mg\sqrt{2}$ C) $\frac{Mg}{\sqrt{2}}$ D) $Mg(\sqrt{2}-1)$
34. A car weighing 2×10^3 kg and moving 20 m/s along a main road collides with a lorry of mass 8×10^3 kg which emerges at 5 m/s from a cross road at right angles to the main road. If the two vehicles lock, what will be their velocity after the collision?
- A) $4/\sqrt{2}$ m/s, 45° with cross road B) $4/\sqrt{2}$ m/s, 60° with cross road
- C) $4/\sqrt{2}$ m/s, 60° with main road D) $4/\sqrt{2}$ m/s, 45° with main road
35. The specific heat at constant volume for the monatomic argon is 0.075 kcal/kg-K, whereas its gram molecular specific heat is $C_v = 2.98$ cal/mol-K. The mass of the argon atom is (Avogadro's number = 6.02×10^{23} molecules/mol)
- A) 6.60×10^{-23} g B) 3.30×10^{-23} g C) 2.20×10^{-23} g D) 13.20×10^{-23} g
36. Six point charges are arranged at the vertices of regular hexagon of side length a (shown in Figure). The magnitude of electric field at the centre of regular hexagon is



- A) $\frac{q}{4\pi\epsilon_0 a^2}$ B) Zero C) $\frac{q}{2\pi\epsilon_0 a^2}$ D) None of these

37. Two equal negative charge $-q$ are fixed at the fixed points $(0, \alpha)$ and $(0, -\alpha)$ on the Y-axis. A positive charge Q is released from rest at the point $(2\alpha, 0)$ on the X-axis. The charge Q will

- A) Execute simple harmonic motion about the origin B) Move to the origin and remain at rest
C) Move to infinity D) Execute oscillatory but not simple harmonic motion

38. A long horizontal wire P carries a current of 50 A. It is rigidly fixed. Another fine wire Q is placed directly above and parallel to P. The weight of wire Q is 0.075 Nm^{-1} and carries a current of 25 A. Find the positive of wire Q from P so that wire Q remains suspended due to the magnetic repulsion. Also indicate the direction of current in Q with respect to P.

- A) $\frac{1}{2} \times 10^{-2} \text{ m}$ B) $\frac{1}{3} \times 10^{-2} \text{ m}$ C) $\frac{1}{4} \times 10^{-2} \text{ m}$ D) $\frac{1}{5} \times 10^{-2} \text{ m}$

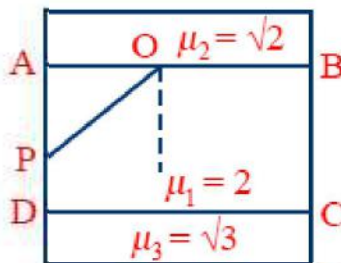
39. In a vibration magnetometer, the time period of a bar magnet oscillating in horizontal component of earth's magnetic field is 2 s. When a magnet is brought near and parallel to it, the time period reduces to 1 s. The ratio H/F , When F is field due to magnet will be

- A) 3 B) $1/3$ C) $\sqrt{3}$ D) $1/\sqrt{3}$

40. The self inductance of a choke coil is 10 mH. When it is connected with a 10V dc source, then the loss of power is 20 watt. When it is connected with 10 volt ac source loss of power is 10 watt. The frequency of ac source will be

- A) 50 Hz B) 60 Hz C) 80 Hz D) 100 Hz

41. A parallel sides slab ABCD of refractive index 2 is sandwiched between two slabs of refractive indices $\sqrt{2}$ and $\sqrt{3}$ as shown in the figure. The minimum value of angle θ such that the ray PQ suffers total internal reflection at both the surfaces AB and CD is



- A) 30° B) 45° C) 60° D) 75°

42. A nucleus with $Z = 92$ emits the following in a sequence

$\alpha, \alpha, \beta^-, \beta^-, \alpha, \alpha, \alpha, \alpha; \beta^-, \beta^-, \alpha, \beta^+, \beta^+, \alpha.$

The Z of the resulting nucleus is

A) 76 B) 78 C) 82 D) 74

43. A Carnot engine whose sink is at 300K has an efficiency of 40%. By how much should the temperature of source be increased so as to increase its efficiency by 50% of original efficiency?

A) 275 K B) 325 K C) 250 K D) 380 K

44. Huygens' wave theory allows us to know

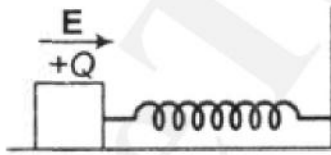
A) the wavelength of the wave B) the velocity of the wave C) the amplitude of the wave

D) the propagation of wavefronts

45. Four identical particles of equal masses 1 kg made to move along the circumference of a circle of radius 1 m under the action of their own mutual gravitational attraction. The speed of each particle will be

A) $\sqrt{\frac{(1+2\sqrt{2})G}{2}}$ B) $\sqrt{\frac{G}{2}(1+2\sqrt{2})}$ C) $\sqrt{G(1+2\sqrt{2})}$ D) $\sqrt{\frac{G}{2}(2\sqrt{2}-1)}$

46. A wooden block performs SHM on a frictionless surface with frequency ν_0 . The block carries a charge $+Q$ on its surface. If now a uniform electric field E is switched on as shown, then the SHM of the block will be



A) Of the same frequency and with shifted mean position

B) Of the same frequency and with the same mean position

C) Of changed frequency and with shifted mean position

D) Of changed frequency and with the same mean position

47. The electric field of a plane electromagnetic wave varies with time of amplitude 2Vm^{-1} propagating along z -axis. The average energy density of the magnetic field is (in Jm^{-3})

A) 13.29×10^{-12} B) 8.85×10^{-12} C) 17.72×10^{-12} D) 4.43×10^{-12} E) 2.22×10^{-12}

48. A wave travelling along the x -axis is described by the equation $y(x, t) = 0.005 \cos(\alpha x - \beta t)$. If the wavelength and the time period of the wave are 0.08 m and 2.0 s , respectively, then α and β in appropriate units are

A) $\alpha = \frac{0.08}{\pi}, \beta = \frac{2.0}{\pi}$ B) $\alpha = \frac{0.04}{\pi}, \beta = \frac{1.0}{\pi}$ C) $\alpha = 12.50\pi, \beta = \frac{\pi}{2.0}$ D) $\alpha = 25.00\pi, \beta = \pi$

49. A famous relation in physics relates 'moving mass' m to 'rest mass' m_0 of a particle in terms of its speed v and the speed of light c . (This relation first arose as a consequence of special theory of relativity due to Albert Einstein). A boy recalls the relationship almost correctly but forgets where to put the constant c . He writes: $m = \frac{m_0}{(1-v^2)^{1/2}}$

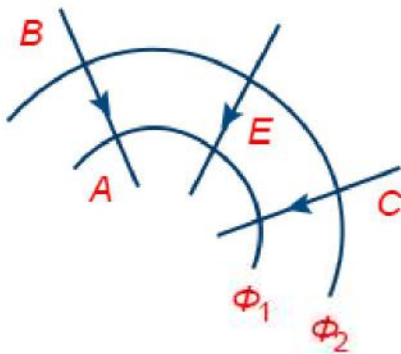
Guess where to put the missing c .

A) $m_0 \left(1 - \frac{v}{c}\right)^{v/2}$ B) $m_0 \left(1 - \frac{v^2}{c^2}\right)^{-1/2}$ C) $m_0 \left(1 - \frac{v}{c}\right)^{-1/2}$ D) $m_0 \left(1 - \frac{v^2}{c^2}\right)^{1/2}$

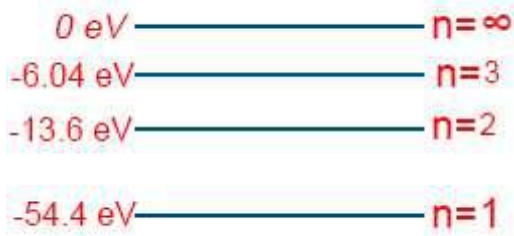
50. If $90^\circ < A < 180^\circ, 180^\circ < B < 270^\circ$ and $\cos A \frac{-\sqrt{3}}{2} = \sin B \frac{-3}{5} =$, then $\frac{2 \tan B + \sqrt{3} \tan A}{\cot^2 A + \cos B}$ is

A) $\frac{3}{4}$ B) $\frac{4}{5}$ C) $-\frac{4}{5}$ D) $\frac{5}{22}$

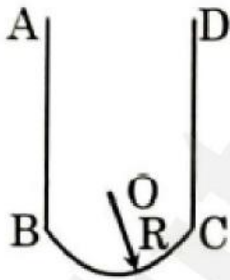
51. The resistance $R = \frac{V}{i}$ where $V = 100 \pm 5$ volts and $i = 10 \pm 0.2$ amperes. then the total percentage of error in R _____.
52. Temperature of source is 330°C . Temperature (in $^\circ\text{K}$) of sink is changed in order to increase the efficiency of engine from $\frac{1}{5}$ to $\frac{1}{4}$, by _____
53. A cylinder of fixed capacity 44.8 litre contains a monatomic gas at standard temperature and pressure. The amount of heat required to cylinder by 10°C will be _____ R
($R =$ universal gas constant)
54. The fundamental frequency of a sonometer wire increases by 5 Hz if its tension is increased by 21%. The fundamental frequency of the sonometer wire in a Hz is _____
55. In moving from A to B along an electric field line, the electric field does 6.4×10^{-19} J of work on an electron. If Φ_1, Φ_2 are equipotential surfaces, then the potential difference ($V_C - V_A$) is (in V) _____



56. The energy level diagram for an hydrogen like atom is shown in the figure. The radius of its first Bohr orbit is _____ Å.



57. The mass of a ${}^7_3\text{Li}$ nucleus is 0.042 a less than the sum of the masses of all its nucleons. The binding energy per nucleon of ${}^7_3\text{Li}$ nucleus is nearly _____ MeV.
58. A thread carrying a charge (uniform) λ per unit length has configuration shown in figure.



Assuming a curvature radius R to be considerably less than the length of thread. Find the magnitude of electric field strength at point O

59. An electromagnetic wave of frequency 5GHz , is travelling in a medium whose relative electric permittivity and relative magnetic permeability both are 2. Its velocity in this medium is $\dots \times 10^7 \text{ m/s}$.
60. A compass needle oscillates 20 times per minute at a place where the dip is 30° and 30 times per minute where the dip is 60° . The ratio of total magnetic field due to the earth at two places respectively is $\frac{4}{\sqrt{x}}$. The value of x is

Chemistry

61. How many ions per molecule are produced in the solution when mohl salt is dissolved in excess of water
- A) 6 B) 4 C) 10 D) 5
62. If the shortest wavelength of hydrogen atom in Lyman series is x , then longest wavelength in Balmer series of He^+ is
- A) $\frac{9x}{5}$ B) $\frac{36x}{5}$ C) $\frac{x}{4}$ D) $\frac{5x}{9}$

63. Which of the following is not isostructural with SiCl_4 ?

- A) PO_4^{3-} B) NH_4^+ C) SCl_4 D) SO_4^{2-}

64. If a gas at constant temperature and pressure expands, then its

- A) internal energy decreases B) entropy increases and then decreases C) internal energy increases
D) internal energy remains constant

65. At 25°C , the solubility product of $\text{Mg}(\text{OH})_2$ is 1.0×10^{-11} . At which pH, will Mg^{2+} ions start precipitating in the form of $\text{Mg}(\text{OH})_2$ from a solution of 0.001 M Mg^{2+} ions?

- A) 9 B) 10 C) 11 D) 8

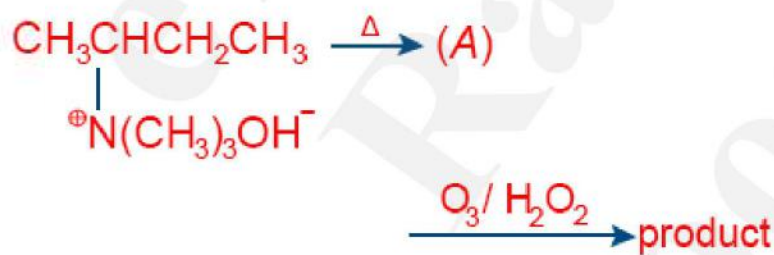
66. The increasing order of atomic radii of the following group 13 elements is

- A) $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$ B) $\text{Ga} < \text{Al} < \text{In} < \text{Tl}$ C) $\text{Al} < \text{In} < \text{Ga} < \text{Tl}$ D) $\text{Al} < \text{Ga} < \text{Tl} < \text{In}$

67. The compound formed in the positive test for nitrogen with the Lassaigne solution of an organic compound is

- A) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ B) $\text{Na}_3[\text{Fe}(\text{CN})_6]$ C) $\text{Fe}(\text{CN})_3$ D) $\text{Na}_4[\text{Fe}(\text{CN})_5\text{NOS}]$

68. A major alkene (A) obtained in the following reaction undergo ozonolysis to give the product.



The product obtained is/are identified as

- A) ethanal only B) methanal and propanal C) methanal and acetone D) Only acetone

69. A 5.25% solution of a substance is isotonic with a 1.5% solution of urea (molar mass = 60 g mol^{-1}) in the same solvent. If the densities of both the solutions are assumed to be equal to 1.0 g cm^{-3} , molar mass of the substance will be

- A) 90.0 g mol^{-1} B) 115.0 g mol^{-1} C) 105.0 g mol^{-1} D) 210.0 g mol^{-1}

70. The hydrogen electrode is dipped in a solution of pH 3 at 25°C . The potential would be (the value of 2.303 RT/F is 0.059 V)

A) 0.177 V B) 0.087 V C) 0.059 V D) -0.177 V

71. For the reaction, $\text{N}_2\text{O}_5 \rightarrow 2\text{NO}_2 + \frac{1}{2}\text{O}_2$

Give $\frac{-d[\text{N}_2\text{O}_5]}{dt} = K_1 [\text{N}_2\text{O}_5]$; $\frac{d[\text{NO}_2]}{dt} = K_2 [\text{N}_2\text{O}_5]$ and $\frac{d[\text{O}_2]}{dt} = K_3 [\text{N}_2\text{O}_5]$, the relation between K_1 , K_2 and K_3 is

A) $2K_1 = K_2 = 4K_3$ B) $K_1 = K_2 = K_3$ C) $2K_1 = 4K_2 = K_3$ D) None of these

72. Which of the following is the most explosive?

A) NCl_3 B) PCl_3 C) AsCl_3 D) All

73. Misch metal is

A) an alloy of copper B) an alloy of lanthanoid metal C) an alloy of aluminium

D) a mixture of chromium and lead chromate

74. Which of the following complex ions will not show optical activity?

A) $[\text{Co}(\text{en})(\text{NH}_3)_2\text{Cl}_2]^+$ B) $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]^+$ C) $[\text{Pt}(\text{Br})(\text{Cl})(\text{I})(\text{NO}_2)(\text{Py})\text{NH}_3]$

D) $\text{cis-}[\text{Co}(\text{en})_2\text{Cl}_2]^+$

75. In the following groups:

- | | |
|-------------------------|--------------------------------------|
| 1. —OAc | 2. —OMe |
| 3. —OSO ₂ Me | 4. —OSO ₂ CF ₃ |

the order of leaving group ability is

A) $1 > 2 > 3 > 4$ B) $4 > 3 > 1 > 2$ C) $4 > 2 > 1 > 3$ D) $2 > 3 > 4 > 1$

76. Which one of the following is more reactive than the rest towards a mixture of anhydrous ZnCl_2 and concentrated HCl ?

A) 2-methylpropan-2-ol B) methanol C) butan-2-ol D) butan-1-ol

77. Identify the correct statement among the following.

A) n,n-dimethylaniline reacts with nitrous acid to give p-nitroso-N,N-dimethyl aniline

B) bromination of p-toluidine produces 3,5-dibromo, 4-methylaniline

C) aliphatic amines are less basic than ammonia

D)

aliphatic primary amines combine with nitrous acid under-cold conditions to form stable diazonium salts

78. Which of the vitamins given below is water soluble?

A) Vitamin C **B)** Vitamin D **C)** Vitamin E **D)** Vitamin K

79. Which of the following order is wrong?

A) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3$ —acidic **B)** $\text{Li} < \text{Be} < \text{B} < \text{C}$ —(IE)₁

C) $\text{Al}_2\text{O}_3 < \text{MgO} < \text{Na}_2\text{O} < \text{K}_2\text{O}$ —basic **D)** $\text{Li}^{2+} < \text{Na}^+ < \text{K}^+ < \text{Cs}^+$ —ionic radius

80. Equivalent weight of H_3PO_2 in a reaction is found to be half of its molecular weight. It can be due to its

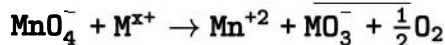
A) reaction of its two H^+ ions **B)** oxidation to H_3PO_3 **C)** Both (a) and (b) **D)** None of the above

81. 2s and 2p-atomic orbitals combine to give how many molecular orbitals ?

82. If the enthalpy of vaporization of water is $186.5 \text{ kJ mol}^{-1}$, the entropy of its vaporization will be _____ $\text{JK}^{-1} \text{ mol}^{-1}$

83. A weak acid, HA, has a K_a of 1.00×10^{-5} . If 0.0100 mole of this acid dissolved in one litre of water, the percentage of acid dissociated at equilibrium is closest to

84. If one third mole of permanganate oxidises 1.67 moles of M^{x+} as per the given reaction then the value of 'x' in the metal ion is _____



85. The heat of hydrogenation of benzene is 50 kcal/mol. The resonance energy of benzene is 36 kcal/mol. The heat of hydrogenation of cyclohexene is approximately _____ kcal/mol

86. The vapour pressure of a solution of 5 g of non electrolyte in 100 g of water at a particular temperature is 2985 Nm^{-2} . The vapour pressure of pure water at that temperature is 3000 Nm^{-2} . The molecular weight of the solute is _____.

87. On the basis of the information available from the reaction, $\frac{4}{3}\text{Al} + \text{O}_2 \rightarrow \frac{2}{3}\text{Al}_2\text{O}_3$,

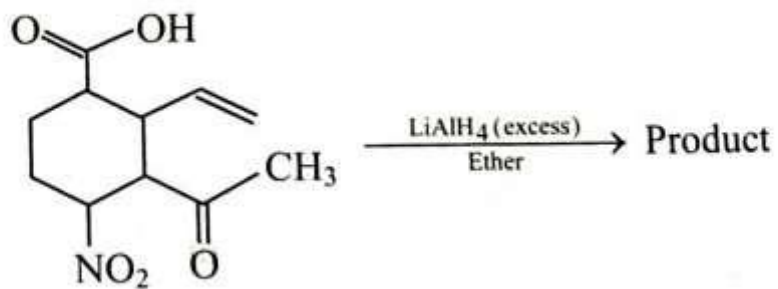
$$\Delta G = -827 \text{ kJ mol}^{-1} \text{ of } \text{O}_2.$$

The minimum emf, required to carry out an electrolysis of Al_2O_3 is _____ V ($F = 96500 \text{ C mol}^{-1}$)

88. In a certain gaseous reaction $\text{A} \rightarrow \text{B}$, the initial pressure is 214 atm and the rate constant is $2.303 \times 10^{-4} \text{ s}^{-1}$. What would be pressure (in atm) of A after 5 mins? [Given: $10^{0.03} = 1.07$]

89. How many of the following oxides are amphoteric in nature? N_2O_3 , P_2O_3 , As_2O_3 , Sb_2O_3 , Bi_2O_3

90. The number of π bonds in the major product will be _____.



Print

eTutor
Rank
Booster