

Title	Size	Time	Neg	Mode	Categories	Test Date	
Grand test-3	75	180	1	Manual	Physical World and Measurements Motion in a Straight Line Laws of Motion System of Particles and Rotational Motion Thermodynamics Oscillations and Waves Electric Charges and Fields Current Electricity Moving charges and magnetism Ray Optics and Optical Instruments Dual Nature of Matter and Radiation Atoms Electronic Devices States of Matter: Gases and Liquids Structure of Atom Chemical Thermodynamics Solutions Equilibrium Chemical Kinetics Surface Chemistry General Principles and Process of Isolation of Metals d - and f -Block Elements Organic Chemistry: Some basic Principles and Techniques Hydrocarbons Haloalkanes and Haloarenes Alcohols, Phenols and Ethers Organic Compounds Containing Nitrogen Complex Numbers and Quadratic Equations Matrices Permutations and Combinations Binomial Theorem Sequences and Series Limits and Derivatives Integrals Straight Lines Vectors Statistics Application of Derivatives Motion in a Plane Mechanical Properties of Fluids Thermal Properties of Matter Alternating Current Wave Optics Solid State Electrochemistry Aldehydes, Ketones and Carboxylic Acids Conic Sections Inverse Trigonometric Functions Continuity and Differentiability Applications of the Integrals Three - dimensional Geometry P - Block Elements Probability	2020-01-03 14:00:00	2020-01-03 17:00:00

S.No	Question
<div style="border: 1px solid black; padding: 5px; display: inline-block;">Mathematics</div>	
1	<p>If α and β are the roots of the quadratic equation $ax^2 + bx + c = 0$, then</p> $\lim_{x \rightarrow \frac{1}{\alpha}} \sqrt{\frac{1 - \cos(cx^2 + bx + a)}{2(1 - \alpha x)^2}} =$ <p>A) $\left \frac{c}{2\alpha} \left(\frac{1}{\alpha} - \frac{1}{\beta} \right) \right$ B) $\left \frac{c}{2\beta} \left(\frac{1}{\alpha} - \frac{1}{\beta} \right) \right$ C) $\left \frac{c}{\alpha\beta} \left(\frac{1}{\alpha} - \frac{1}{\beta} \right) \right$ D) None of these</p> <p style="text-align: right;">Limits and Derivatives</p>
2	<p>The first 3 terms of geometric progression are x, y, z and these have the sum equal to 42. If the middle term y is multiplied by $\frac{5}{4}$, the numbers $x, \frac{5y}{4}, z$ are in arithmetic progression. Then the largest possible value of x is</p>

	A) 16 B) 12 C) 24 D) 20	Sequences and Series
3	The common tangent to the parabolas $y^2 = 4ax$ and $x^2 = 32ay$ has the equation	
	A) $x - 2y - 4a = 0$ B) $x + 2y + 4a = 0$ C) $x + 2y - 4a = 0$ D) $x - 2y + 4a = 0$	Conic Sections
4	The values of α for which the point $(\alpha - 1, \alpha + 1)$ lies in the larger segment of the circle $x^2 + y^2 - x - y - 6 = 0$ made by the chord $x + y - 2 = 0$ is	
	A) $-1 < \alpha < 1$ B) $1 < \alpha < \infty$ C) $-\infty < \alpha < -1$ D) $\alpha \leq 0$	Conic Sections
5	A fair die is tossed 8 times, then the probability that on the 8 th throw a third six is observed	
	A) $\frac{{}^8C_3 \cdot 5^5}{6^8}$ B) $\frac{{}^7C_2 \cdot 5^5}{6^8}$ C) $\frac{{}^7C_2 \cdot 5^5}{6^7}$ D) $\frac{{}^7C_2 \cdot 5^6}{6^7}$	Probability
6	Number of terms in the expansion of $(1 + x)^{101} (1 + x^2 - x)^{100}$ is	
	A) 302 B) 301 C) 202 D) 101	Binomial Theorem
7	The total number of integral solutions of $xyz = 24$ where $x, y, z \in \text{integers}$	
		Permutations and Combinations
8	If $\Delta(x) = \begin{vmatrix} 1 + x + 2x^2 & x + 3 & 1 \\ x + 2x^2 & x & 3 \\ 3x + 6x^2 & 3x + 11 & 9 \end{vmatrix}$, then $\int_0^1 \Delta(x) dx$ is	
	A) $\frac{176}{5}$ B) $\frac{-176}{3}$ C) $\frac{186}{3}$ D) $\frac{-192}{3}$	Integrals
9	$\sum_{i=1}^{10} (x_i - 10)^2 = 2000$, $\sum_{i=1}^{10} (x_i + 10) = 2000$, then the standard deviation of data set x	
		Statistics
10	The tangent to $y = ax^2 + bx + \frac{7}{2}$ at $(1, 2)$ is parallel to the normal at the point $(-2, 2)$ on the curve $y = x^2 + 6x + 10$. Then the value of $2(a - b)$ is	
		Application of Derivatives
11	Sum of the series $\sum_{r=1}^n (r^2 + 1) r!$ is	

	A) $(n + 1)!$ B) $(n + 2)! - 1$ C) $n(n + 1)!$ D) $n(n + 1)! - 1$	Sequences and Series
12	If $x = \sin^{-1}(\sin 10)$ and $y = \cos^{-1}(\cos 10)$, then the value of $y - x$ is	
	A) π B) 7π C) 0 D) 10	Inverse Trigonometric Functions
13	If $ f(x) - f(y) \leq 2 x - y ^{3/2} \forall x, y \in \mathbb{R}$ and $f(0) = 1$ then the value of $\int_0^1 f^2(x) dx$ is equal to	
		Integrals
14	Let the equation of two sides of a triangle are $4x + 5y = 20$ and $3x - 2y + 6 = 0$ and the orthocentre of triangle is $(1, 1)$, then the equation of third side is	
	A) $y + 10 = \frac{-13}{61} \left(x + \frac{35}{2}\right)$ B) $y + 10 = \frac{-13}{61} \left(x - \frac{35}{2}\right)$ C) $y + 10 = \frac{13}{61} \left(x - \frac{35}{2}\right)$ D) $y - 10 = \frac{13}{61} \left(x - \frac{35}{2}\right)$	Straight Lines
15	If $x = 3 \tan t$, $y = 3 \sec t$, then $\frac{d^2y}{dx^2}$ at $t = \frac{\pi}{4}$ is	
	A) 3 B) $\frac{1}{6\sqrt{2}}$ C) $\frac{1}{2\sqrt{6}}$ D) 1	Continuity and Differentiability
16	Let z_0 is the root of the equation $x^2 + x + 1 = 0$ and $z = 3 + 6i(z_0)^{81} - 3i(z_0)^{93}$, then $\arg(z)$ is equal to	
	A) $\frac{\pi}{4}$ B) $\frac{\pi}{3}$ C) π D) $\frac{\pi}{6}$	Complex Numbers and Quadratic Equations
17	$\int \frac{5x^8 + 7x^6}{(x^2 + 1 + 2x^7)^2} dx$ is equal to	
	A) $\frac{x}{(x^2 + 1 + 2x^7)} + c$ B) $\frac{x^7}{(x^2 + 1 + 2x^7)} + c$ C) $\frac{x^6}{(x^2 + 1 + 2x^7)} + c$ D) $\frac{x^2}{(x^2 + 1 + 2x^7)} + c$	Integrals
18	If $\vec{A} = \hat{i} - \hat{j}$, $\vec{B} = \hat{i} + \hat{j} + \hat{k}$ are two vectors and \vec{C} is another vector such that $\vec{A} \times \vec{C} + \vec{B} = \vec{0}$ and $\vec{A} \cdot \vec{C} = 0$, then $ \vec{C} ^2 =$	
		Vectors
19	Find the sum of all possible values of θ in the interval $\left(\frac{-\pi}{2}, \pi\right)$ for which $\frac{3 + 2i \sin \theta}{1 - 2i \sin \theta}$ is purely imaginary	

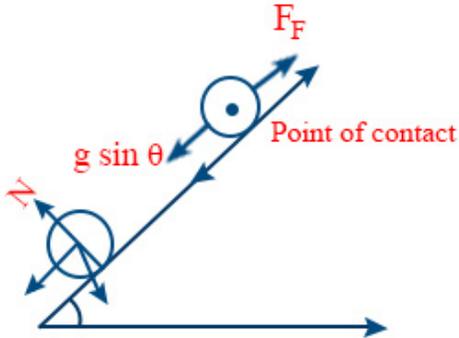
	A) $\frac{\pi}{3}$ B) π C) $\frac{2\pi}{3}$ D) $\frac{\pi}{2}$	Complex Numbers and Quadratic Equations
20	Let $A = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$, then the value of A^{-50} at $\theta = \frac{\pi}{12}$ is	
	A) $\begin{bmatrix} -\frac{\sqrt{3}}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$ B) $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$ C) $\begin{bmatrix} -\frac{\sqrt{3}}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$ D) $\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & -\frac{1}{2} \end{bmatrix}$	Matrices
21	If a slant height of a right circular cone is 3cm, then the maximum volume of a cone is	
	A) $2\sqrt{3} \pi \text{ cm}^3$ B) $4\sqrt{3} \pi \text{ cm}^3$ C) $(2 + \sqrt{3}) \pi \text{ cm}^3$ D) $(2 - \sqrt{3}) \pi \text{ cm}^3$	Application of Derivatives
22	If $px + qy + r = 0$ represent a family of straight lines such that $3p + 2q + 4r = 0$, then	
	A) All lines are parallel B) All lines are inconsistent C) All lines are concurrent at $\left(\frac{3}{4}, \frac{1}{2}\right)$	
	D) All lines are concurrent at (3, 2)	Straight Lines
23	The equation of the line through (-4, 1, 3) and parallel to the plane $x + y + z = 3$ while the line intersects the another line $x + y - z = 0 = x + 2y - 3z + 5$	
	A) $\frac{x+4}{-3} = \frac{y-1}{-2} = \frac{z-3}{-1}$ B) $\frac{x+4}{1} = \frac{y-1}{2} = \frac{z-3}{-3}$ C) $\frac{x+4}{-3} = \frac{y-1}{2} = \frac{z-3}{1}$	
	D) $\frac{x+4}{-1} = \frac{y-1}{2} = \frac{z-3}{-3}$	Three - dimensional Geometry
24	A plane parallel to y-axis passing through line of intersection of planes $x + y + z = 1$ and $2x + 3y - z - 4 = 0$, which of the point lie on the plane	
	A) (3, 2, 1) B) (-3, 0, 1) C) (-3, 1, 1) D) (3, -1, 1)	Three - dimensional Geometry
25	The area bounded by the curve $y = x^2 - 1$ tangent to it at (2, 3) and y-axis is	
	A) $\frac{2}{3}$ B) $\frac{4}{3}$ C) $\frac{8}{3}$ D) 1	Applications of the Integrals
Physics		
26	A physical quantity Q is related to four observables x, y, z and t by the relation $Q = \frac{x^{2/5} z^3}{y\sqrt{t}}$. The percentage errors of measurement in x, y, z and t are 2.5%, 2%, 0.5% and 1% respectively. The percentage error in Q will be	

- 27 If a particle is projected with speed 'u' from the ground at angle ' θ ' with horizontal, then radius of curvature at a point where velocity vector is perpendicular to the initial velocity vector is given by

A) $\frac{u^2 \cos^2 \theta}{g}$ B) $\frac{u^2 \cot^2 \theta}{g \sin \theta}$ C) $\frac{u^2}{g}$ D) $\frac{u^2 \tan^2 \theta}{g \cos \theta}$

Motion in a Plane

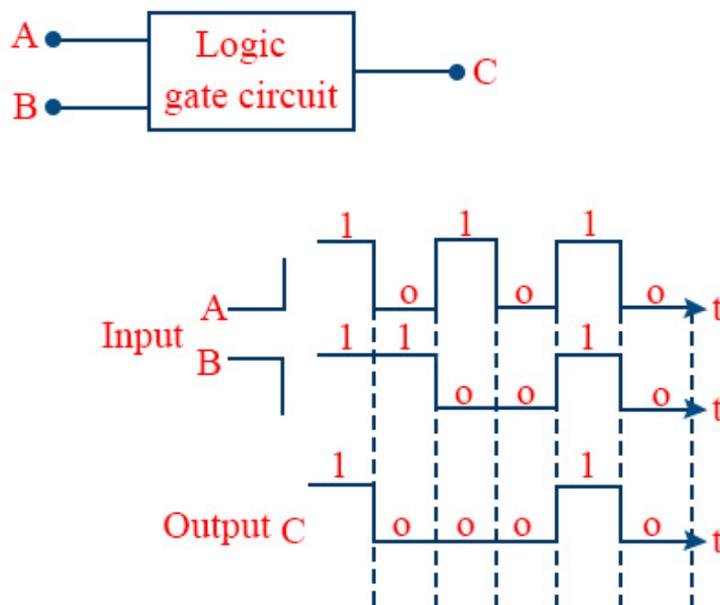
- 28 A cylinder rolls up an inclined plane, reaches some height and then rolls down (without slipping through out these motions). The direction of frictional force acting on the cylinder are



- A) up the incline ascending and down the decline descending
 B) up the incline while ascending and descending
 C) down the incline while ascending and descending D) up the incline descending

System of Particles and Rotational Motion

- 29 The following figure shows a logic gate circuit with 2 inputs A and B and output C. The voltage waveform of A, B and C are as shown in second figure below



The logic of circuit gate is :-

A) OR gate B) AND gate C) NAND gate D) NOR gate

Electronic Devices

30 Two linear simple harmonic motions of equal amplitudes a and frequency ω and 2ω are impressed on a particle along x and y axes respectively. If the initial phase difference between them is $\pi/2$ the resultant trajectory equation of the particle is

A) $a^2y^2 = x^2(a^2 - x^2)$ B) $a^2y^2 = 2x^2(a^2 - x^2)$ C) $a^2y^2 = 4x^2(a^2 - x^2)$ D) $a^2y^2 = 8x^2(a^2 - x^2)$

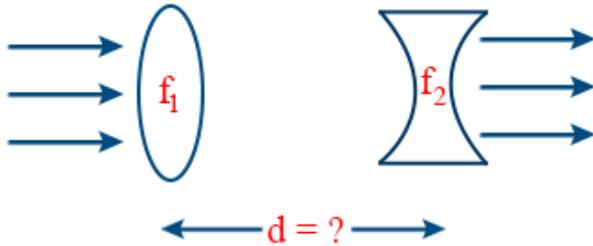
Oscillations and Waves

31 One mole of an ideal monoatomic gas undergoes the process $P = \alpha T^{1/2}$ where α is a constant. The molar specific heat of the gas is

A) $\frac{R}{r-1}$ B) $\frac{RT}{r-1}$ C) $\left(\frac{r+1}{r-1}\right)\frac{R}{2}$ D) $\left(\frac{r-1}{r+1}\right)\frac{R}{2}$

Thermal Properties of Matter

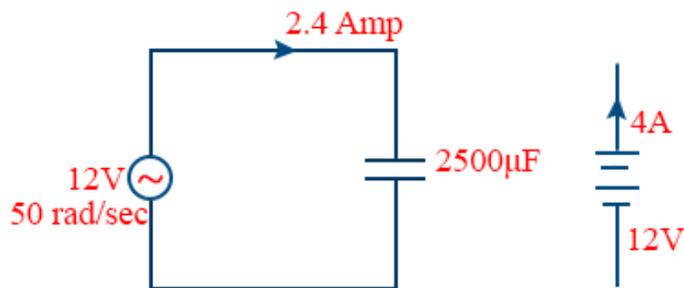
32 If the incident and emergent light rays are to be parallel, distance ' d ' between the 2 given lenses is



A) $\frac{f_1 f_2}{f_1 + f_2}$ B) $f_1 + f_2$ C) $\frac{f_1 + f_2}{2}$ D) $\sqrt{f_1 f_2}$

Ray Optics and Optical Instruments

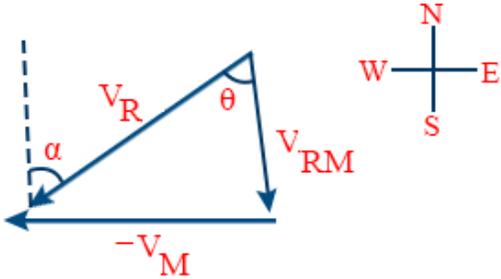
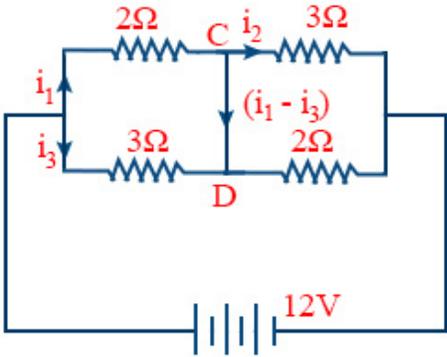
33 A current of 4A flows in a coil when connected to a 12 volt DC supply. If the same coil is connected to a 12 V, 50 rad/sec AC source, a current of 2.4 A flows in the circuit. If a 2500 μF capacitor is connected in series to the coil, then the power dissipated in the circuit(in watts)_____



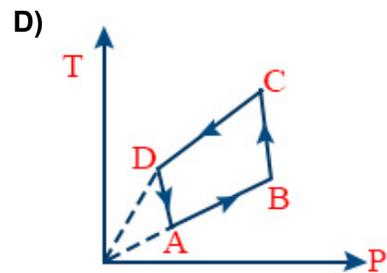
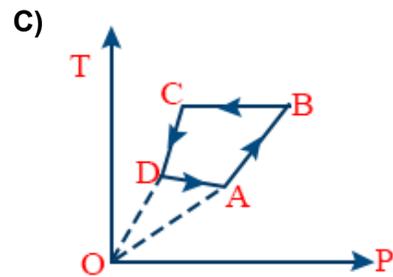
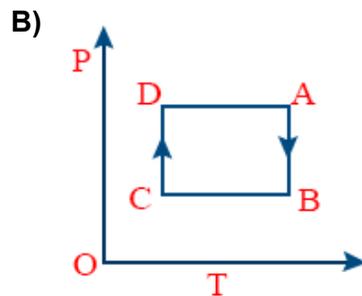
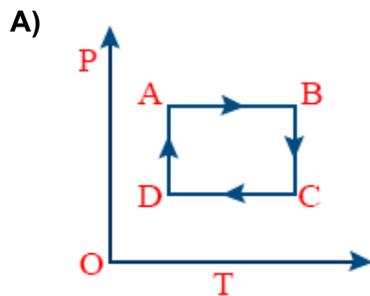
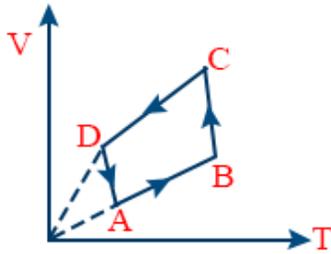
Alternating Current

34 If the current sensitivity of a moving coil galvanometer is increased by 20%, and its resistance is increased by 20%, and its resistance also becomes 1.5 times, the voltage sensitivity is

	A) decreased by 20% B) increased by 20% C) decreased by 40% D) increased by 40%	Moving charges and magnetism
35	An infinitely long straight linear charge of density $\lambda = 60 \mu \text{ cm}^{-1}$ passes through an imaginary cylinder of length $l = 40 \text{ cm}$ and radius 15 cm . A point charge $q = -10 \mu \text{ C}$ is placed outside the cylinder. The maximum net flux coming out of the surface of the cylinder will be ($\epsilon_0 \rightarrow$ permittivity of medium)	
	A) $\frac{20 \mu \text{ Nm}^2}{\epsilon_0 \text{ C}}$ B) $\frac{30 \mu \text{ Nm}^2}{\epsilon_0 \text{ C}}$ C) $\frac{40 \mu \text{ Nm}^2}{\epsilon_0 \text{ C}}$ D) $\frac{50 \mu \text{ Nm}^2}{\epsilon_0 \text{ C}}$	Electric Charges and Fields
36	A horizontal straight conductor of mass "m" and length l is placed in an uniform vertical magnetic field of magnitude 'B'. An amount of charge 'Q' passes through the rod in a very short time such that the conductor begins to move only after all the charge has passed through it. Its initial velocity will be	
	A) $\frac{BQL}{m}$ B) $\frac{BQL}{2m}$ C) $\frac{3BQL}{2m}$ D) the conductor does not move	Moving charges and magnetism
37	In a young's double slit arrangement the distance between the slits is by illuminated by monochromatic light of wavelength $\lambda = 6000 \text{ \AA}$ is 1 mm and the distance of the screen from the slits is 60 cm . The least distance of a point on a screen from the central maxima where the intensity is $3/4^{\text{th}}$ the of the maximum intensity _____ μm .	
		Wave Optics
38	A solid sphere of mass 'm' and radius R rolls on a horizontal rough surface without slipping due to a horizontal force 'F' acting on the top of the sphere. Then the frictional force acting between the body and the surface is	
	A) F B) Zero C) $\frac{7}{3} F$ D) $\frac{3}{7} F$	Laws of Motion
39	A copper cube of side 'a' is heated and then allowed to cool in an evacuated enclosure. It takes time 't' to cool from temperature θ_1 to θ_2 . Now another copper cube of side '2a' is placed in the same enclosure and allowed to cool. The time taken by it to cool from θ_1 to θ_2 through conduct is	
	A) t B) 2t C) 3t D) 4t	Thermal Properties of Matter
40	A hydrogen atom is in an excited state of principle quantum number (n). It emits a photon of wavelength (λ) when it returns to the ground state. The value of n is	
	A) $\sqrt{\frac{\lambda R}{\lambda(R-1)}}$ B) $\sqrt{\frac{(\lambda R - 1)}{\lambda R}}$ C) $\sqrt{\lambda(R-1)}$ D) $\sqrt{\frac{\lambda R}{\lambda R - 1}}$	Atoms

41	<p>A and B are 2 identical beakers. Beaker A is filled fill brim with liquid ($\mu = 1.3$) and beaker B is filled with liquid ($\mu = 1.6$). Both beakers are viewed from directly above. The ratio of apparent depths of A and B is</p> <p>A) 1.3/1.6 B) 1.6/1.3 C) 1 D) 1.3×1.6</p> <p style="text-align: right;">Ray Optics and Optical Instruments</p>
42	<p>The electric field at a point associated with a light wave is $E = E_0 (\sin \omega_1 t \sin \omega_2 t)$. If this light falls on the emitter plate of the photo electric cell having work Φ_0, the stopping potential required is</p> <p>A) $\frac{h\omega_1 - 2\pi\phi_0}{2\pi e}$ B) $\frac{h\omega_2 - 2\pi\phi_0}{2\pi e}$ C) $\frac{h(\omega_1 + \omega_2) - 2\pi\phi_0}{2\pi e}$ D) $\frac{h(\omega_1 - \omega_2) - 2\pi\phi_0}{2\pi e}$</p> <p style="text-align: right;">Dual Nature of Matter and Radiation</p>
43	<p>A spherical refracting surface separates medium 1 ($\mu_1 = 1.2$) and medium 2 ($\mu_2 = 1.5$). The refracting surface is convex towards the rarer medium with curvature radius = 50 cm. The power of the refracting surface</p> <p>A) $\frac{3}{5}$ D B) $-\frac{3}{5}$ D C) $\frac{2}{5}$ D D) $-\frac{2}{5}$ D</p> <p style="text-align: right;">Ray Optics and Optical Instruments</p>
44	<p>A man is walking on a horizontal road towards east with a speed of 1 km/hr. He has to hold the umbrella vertically up to protect himself from the rain. When he stops walking, rain appears to fall at a speed of 2 km/hr making an angle 'α' with the vertical. Then 'α' is</p>  <p>A) $\tan^{-1}(2)$ with vertical towards east B) $\tan^{-1}(2)$ with vertical towards west C) 60° with vertical towards east D) 30° with vertical towards west</p> <p style="text-align: right;">Motion in a Plane</p>
45	<p>In the circuit shown, the battery is ideal. The current from 'C' to 'D' is(in A)_____</p> 

46 A cyclic process is shown on V-T diagram. The same process on a P-T diagram is shown by



Thermodynamics

47 A tiny sphere of mass 'm' and density 'x' is dropped in a tall jar of glycerine of density 'y' when the sphere acquires terminal velocity, the magnitude of viscous force acting on it is

- A) $\frac{mgx}{y}$ B) $\frac{mgx}{x}$ C) $mg(1 - y/x)$ D) $mg \left(1 - \frac{x}{y} \right)$

Mechanical Properties of Fluids

48 A racing car moving towards a huge wall blows the horn. The driver listens the reflected sound has a frequency of one octave of the actual frequency. If V is the velocity of sound, then velocity of car is

- A) $\frac{V}{4}$ B) $\frac{V}{2}$ C) $\frac{V}{3}$ D) $2\frac{V}{3}$

Oscillations and Waves

49 In a full wave junction diode rectifier the input ac has rms value of 20V. The transformer used is a step up transformer having primary and secondary turn ratio 1 : 2. The dc voltage in the rectified output is(in volts)_____

Electronic Devices

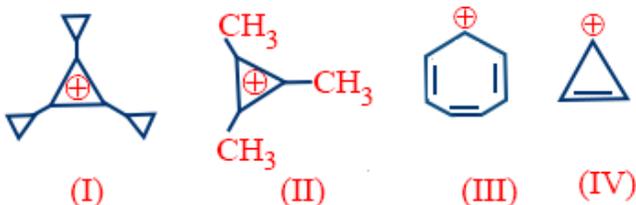
- 50 Two bodies begin to fall freely from the same height but the second body falls 'T' seconds after the first. The time after which the body begins to fall, when the distance between the bodies L is

A) $\frac{T}{2}$ B) $\frac{T}{2} + \frac{L}{gT}$ C) $\frac{L}{gT}$ D) $T + \frac{2L}{gT}$

Motion in a Straight Line

Chemistry

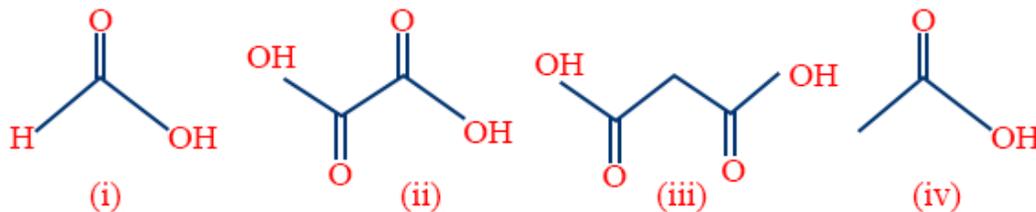
- 51 Arrange the following carbocations in decreasing order of their stability?



- A) i > ii > iii > iv B) i > ii > iv > iii C) i > iii > ii > iv D) iv > iii > ii > i

Organic Chemistry: Some basic Principles and Techniques

- 52 Rank the following molecules in order of decreasing acidity (increasing P^{ka})



- A) ii > iii > i > iv B) iii > ii > i > iv C) i > iv > ii > iii D) iv > iii > i > ii

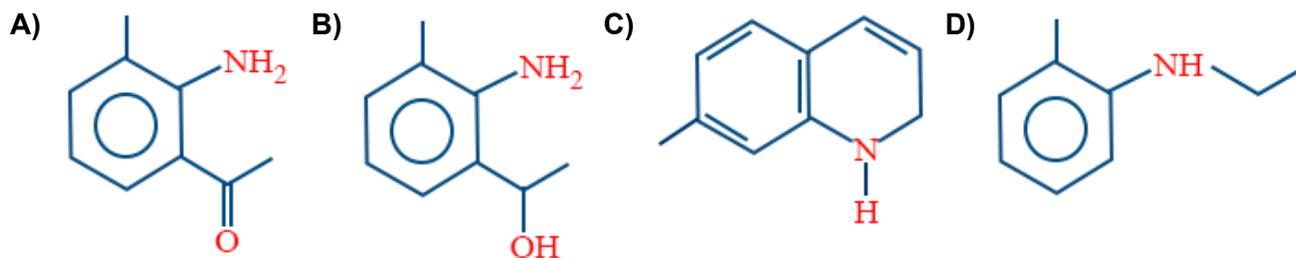
Aldehydes, Ketones and Carboxylic Acids

- 53 Identify product 'C' in the given reaction



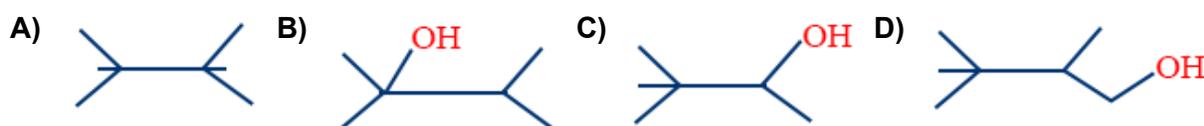
- A) B) C) D) Hydrocarbons

- 54 $\text{CH}_3\text{CO}_2\text{H} \xrightarrow[\text{(iii) LiAlH}_4/\text{H}_3\text{O}^+]{\text{(i) SOCl}_2}$ product "A" is



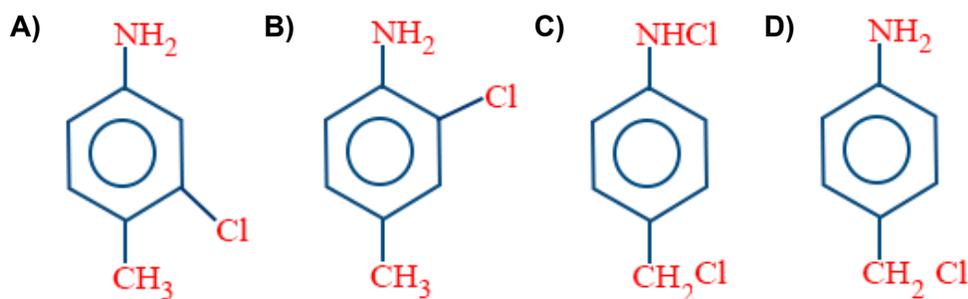
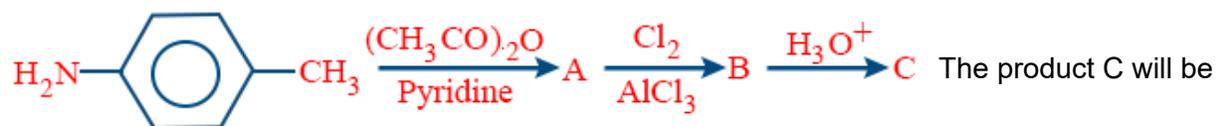
Organic Compounds Containing Nitrogen

55 The final product of the given reaction is



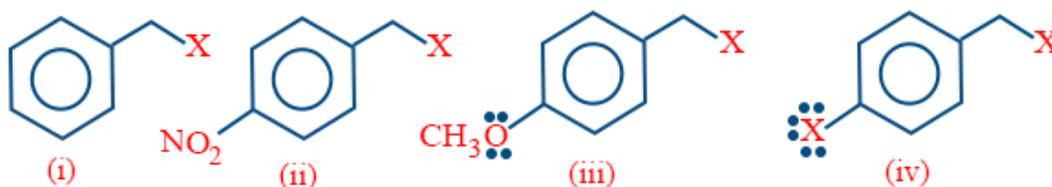
Alcohols, Phenols and Ethers

56 In the given reaction



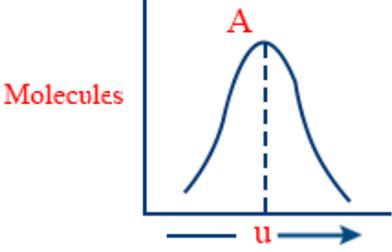
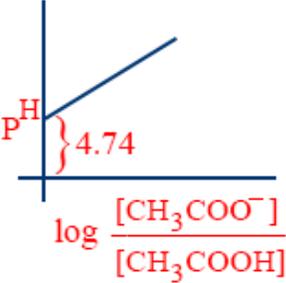
Organic Compounds Containing Nitrogen

57 Which is the correct order of reactivity of given compounds in S_N2 reaction.

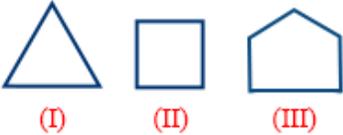


A) i > iv > ii > iii B) iii > i > iv > ii C) ii > iv > i > iii D) ii > i > iv > iii

Haloalkanes and Haloarenes

58	<p>Distribution of molecules with velocity is represented by the curve as shown. Velocity at point 'A' is</p> 
	<p>A) $\sqrt{\frac{3RT}{M}}$ B) $\sqrt{\frac{2RT}{M}}$ C) $\sqrt{\frac{8RT}{M}}$ D) $\sqrt{\frac{RT}{M}}$ States of Matter: Gases and Liquids</p>
59	<p>Ionization energy of $\text{Li}_{(g)}^{2+} \rightarrow \text{Li}_{(g)}^{3+} + 1e^{-}$ is n times the ionization energy of $\text{H}_{(g)} \rightarrow \text{H}_{(g)}^{+} + 1e^{-}$ What is the value of 'n'</p> <p>A) 3 B) 6 C) 9 D) 2 Structure of Atom</p>
60	<p>Variation of P^H of buffer solution of CH_3COOH and $\text{CH}_3\text{COO}^{-}$ varies as given below. Hence, P^H of a mixture containing 0.01 M $(\text{CH}_3\text{COO})_2\text{Ca}$ and 0.02 M CH_3COOH is</p>  <p>A) $4.74 + \log 2$ B) $4.74 - \log 2$ C) 0 D) 4.74 Equilibrium</p>
61	<p>If relative decreases in vapour pressure is 0.4 for a solution containing 1 mole NaCl in 3 mole H_2O. NaCl is _____ % ionised</p> <p>A) 60% B) 50% C) 100% D) 40% Solutions</p>
62	<p>For $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$, 1 mole, N_2 and 3 mole H_2 are at 4 atm. Equilibrium pressure is found to be 3 atm. Hence K_p is</p> <p>A) $\frac{1}{(0.5)(0.15)^3}$ B) $\frac{1}{(0.5)(1.5)^3}$ C) $\frac{3 \times 3}{(0.5)(1.5)^3}$ D) $\frac{3 \times 3}{(0.5)(0.15)^3}$ Equilibrium</p>
63	<p>When one mole of an ideal gas is compressed to half of its initial volume and simultaneously heated to twice its initial temperature the change in entropy is</p>

	A) $C_v \ln 2$ B) $C_p \ln 2$ C) $R \ln 2$ D) $(C_v - R) \ln 2$	Chemical Thermodynamics	
64	1 mole of an ideal gas is allowed to expand reversibly and adiabatically from a temperature of 27°C. The work done is 3 kJ. The final temperature of the gas is equal to _____ K. ($C_v = 20 \text{ J mole}^{-1} \text{ K}^{-1}$)	Chemical Thermodynamics	
65	The enthalpy of hydrogenation of 1-pentene is 126 kJ mole ⁻¹ . The enthalpy of hydrogenation of 1, 3-pentadiene is +230 kJ mole ⁻¹ . Hence resonance energy of 1, 3-pentadiene is _____ kJ.	Hydrocarbons	
66	P^H of 0.05 M calcium acetate solution ($P^{ka} = 4.74$) is	Equilibrium	
67	For half cell Cu^{+1}/Cu $E^\circ = +0.52 \text{ V}$ and $\text{Cu}^{2+}/\text{Cu}^{+1}$ $E^\circ = +0.16 \text{ V}$. Hence E° for the disproportionate reaction $2\text{Cu}^{+1} \rightarrow \text{Cu}^{2+} + \text{Cu}$ would be (in volts) _____	Electrochemistry	
68	At 400 K, energy of activation of a reaction is decreased by 0.8 Kcal in presence of catalyst. Hence rate will be A) Increased by 2.72 times B) Increased by 1.18 times C) Decreased by 2.72 times D) Increased by 6.26 times	Chemical Kinetics	
69	What are the products X, Y, Z in $\text{CO} + \text{H}_2 \xrightarrow{\text{Ni}} \text{X}$; $\text{CO} + \text{H}_2 \xrightarrow{\text{Cu}} \text{Y}$; $\text{CO} + \text{H}_2 \xrightarrow[\text{Cr}_2\text{O}_3]{\text{ZnO}^+} \text{Z}$	A) CH_3OH in all cases B) MeOH, HCHO, CH_4 C) CH_4, HCHO, MeOH D) CH_4, MeOH, HCHO	Surface Chemistry
70	Excess of PCl_5 reacts with Conc. H_2SO_4 giving A) Sulphuryl chloride B) Sulphurous acid C) Chlorosulphonic acid D) Thionyl chloride	P - Block Elements	
71	Which has maximum P^H in aqueous solution A) NaClO_3 B) NaClO_2 C) NaClO D) NaClO_4	P - Block Elements	
72	The matte obtained in the extraction of copper contains		

	A) FeSiO₂ B) SiO₂ + FeS C) FeS + Cu₂S D) CuS + SiO₂ + FeO	General Principles and Process of Isolation of Metals
73	Total number of voids in 0.5 mole of a compound forming hexagonal close packed structure are	
	A) 6.02×10^{13} B) 3.01×10^{13} C) 9.03×10^{23} D) 4.516×10^{23}	Solid State
74	The radius of La ⁺³ is 1.06 Å, Then the radius of Lu ⁺³ is _____ Å	
		d - and f -Block Elements
75	 <p>The correct order of heat of combustion of these compounds is</p>	
	A) I > II > III B) II > I > III C) III > II > I D) III > I > II	Hydrocarbons

Key											
1) A	2) C	3) B	4) A	5) B	6) C	7) 120	8) B	9) 10	10) 7	11) C	12) A
13) 1	14) B	15) B	16) A	17) B	18) 9.5	19) C	20) B	21) A	22) C	23) C	24) D
25) C	26) 5	27) B	28) B	29) B	30) C	31) C	32) B	33) 17.28	34) A	35) B	36) A
37) 60	38) D	39) B	40) D	41) B	42) C	43) A	44) D	45) 1	46) A	47) C	48) C
49) 36	50) B	51) A	52) A	53) B	54) D	55) B	56) B	57) C	58) B	59) C	60) D
61) C	62) B	63) D	64) 150	65) 22	66) 8.87	67) 0.32	68) A	69) C	70) A	71) C	72) C
73) C	74) 0.85	75) C									