JEE April 2024

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Subject	B. Tech

Section : **Mathematics Section A**

Q.1 There are 5 points P_1, P_2, P_3, P_4, P_5 on the side AB, excluding A and B, of a triangle ABC. Similarly there are 6 points $P_6, P_7, \ldots, P_{11}$ on the side BC and 7 points $P_{12}, P_{13}, \ldots, P_{18}$ on the side CA of the triangle. The number of triangles, that can be formed using the points $P_1, P_2, \ldots, P_{18}$ as vertices, is :

Options

1. 776
2. 796
3. 751
4. 771

Question Type : **MCQ**
Question ID : **87827055434**
Option 1 ID : **878270218266**
Option 2 ID : **878270218267**
Option 3 ID : **878270218268**
Option 4 ID : **878270218265**
Status : **Not Answered**
Chosen Option : **--**

Q.2 Three urns A, B and C contain 7 red, 5 black; 5 red, 7 black and 6 red, 6 black balls, respectively. One of the urn is selected at random and a ball is drawn from it. If the ball drawn is black, then the probability that it is drawn from urn A is :

Options

1. $\frac{5}{18}$
2. $\frac{7}{18}$
3. $\frac{5}{16}$
4. $\frac{4}{17}$

Question Type : **MCQ**
Question ID : **87827055446**
Option 1 ID : **878270218315**
Option 2 ID : **878270218316**
Option 3 ID : **878270218313**
Option 4 ID : **878270218314**
Status : **Answered**
Chosen Option : **4**

Q.3 Let $\alpha, \beta \in \mathbf{R}$. Let the mean and the variance of 6 observations $-3, 4, 7, -6, \alpha, \beta$ be 2 and 23, respectively. The mean deviation about the mean of these 6 observations is :

Options

1. $\frac{16}{3}$
2. $\frac{11}{3}$
3. $\frac{13}{3}$
4. $\frac{14}{3}$

Question Type : **MCQ**
Question ID : **87827055447**
Option 1 ID : **878270218318**
Option 2 ID : **878270218317**
Option 3 ID : **878270218320**
Option 4 ID : **878270218319**
Status : **Not Answered**
Chosen Option : **--**

Q.4

Let the sum of the maximum and the minimum values of the function $f(x)=\frac{2x^2-3x+8}{2x^2+3x+8}$ be $\frac{m}{n}$, where gcd(m, n) = 1. Then m + n is equal to :

Options

1. 182
2. 195
3. 201
4. 217

Question Type : **MCQ**
Question ID : **87827055439**
Option 1 ID : **878270218285**
Option 2 ID : **878270218286**
Option 3 ID : **878270218287**
Option 4 ID : **878270218288**
Status : **Not Answered**
Chosen Option : **--**

Q.5

One of the points of intersection of the curves $y=1+3x-2x^2$ and $y=\frac{1}{x}$ is $\left(\frac{1}{2}, 2\right)$. Let the area of the region enclosed by these curves be $\frac{1}{24}(l\sqrt{5}+m)-n\log_e(1+\sqrt{5})$, where l, m, n $\in$ **N**. Then $l+m+n$ is equal to

Options

1. 31
2. 29
3. 32
4. 30

Question Type : **MCQ**
Question ID : **87827055440**
Option 1 ID : **878270218291**
Option 2 ID : **878270218290**
Option 3 ID : **878270218292**
Option 4 ID : **878270218289**
Status : **Not Answered**
Chosen Option : **--**

Q.6 Let $f: \mathbf{R} \to \mathbf{R}$ be a function given by

$$f(x) = \begin{cases} \dfrac{1-\cos 2x}{x^2}, & x < 0 \\ \alpha, & x = 0, \\ \dfrac{\beta\sqrt{1-\cos x}}{x}, & x > 0 \end{cases}$$

where $\alpha, \beta \in \mathbf{R}$. If f is continuous at $x = 0$, then $\alpha^2 + \beta^2$ is equal to :

Options

1. 6
2. 3
3. 48
4. 12

Question Type : **MCQ**
Question ID : **87827055433**
Option 1 ID : **878270218262**
Option 2 ID : **878270218261**
Option 3 ID : **878270218264**
Option 4 ID : **878270218263**
Status : **Not Answered**
Chosen Option : **--**

Q.7 Let $f(x) = \begin{cases} -2, & -2 \le x \le 0 \\ x - 2, & 0 < x \le 2 \end{cases}$ and $h(x) = f(|x|) + |f(x)|$. Then $\int_{-2}^{2} h(x)\,dx$ is equal to :

Options

1. 2
2. 4
3. 1
4. 6

Question Type : **MCQ**
Question ID : **87827055437**
Option 1 ID : **878270218278**
Option 2 ID : **878270218279**
Option 3 ID : **878270218277**
Option 4 ID : **878270218280**
Status : **Not Answered**
Chosen Option : **--**

Q.8

If the system of equations

$$x+\left(\sqrt{2}\sin\alpha\right)y+\left(\sqrt{2}\cos\alpha\right)z=0$$
$$x+(\cos\alpha)y+(\sin\alpha)z=0$$
$$x+(\sin\alpha)y-(\cos\alpha)z=0$$

has a non-trivial solution, then $\alpha\in\left(0,\frac{\pi}{2}\right)$ is equal to :

Options

1. $\frac{7\pi}{24}$
2. $\frac{11\pi}{24}$
3. $\frac{5\pi}{24}$
4. $\frac{3\pi}{4}$

Question Type : **MCQ**
Question ID : **87827055431**
Option 1 ID : **878270218254**
Option 2 ID : **878270218256**
Option 3 ID : **878270218255**
Option 4 ID : **878270218253**
Status : **Not Answered**
Chosen Option : **--**

Q.9

A square is inscribed in the circle $x^2+y^2-10x-6y+30=0$. One side of this square is parallel to $y=x+3$. If (x_i, y_i) are the vertices of the square, then $\Sigma\left(x_i^2+y_i^2\right)$ is equal to :

Options

1. 152
2. 156
3. 148
4. 160

Question Type : **MCQ**
Question ID : **87827055442**
Option 1 ID : **878270218298**
Option 2 ID : **878270218299**
Option 3 ID : **878270218297**
Option 4 ID : **878270218300**
Status : **Not Answered**
Chosen Option : **--**

Q.10 Let a unit vector which makes an angle of 60° with $2\hat{i} + 2\hat{j} - \hat{k}$ and an angle of 45° with $\hat{i} - \hat{k}$ be $\vec{C}$. Then $\vec{C} + \left(-\frac{1}{2}\hat{i} + \frac{1}{3\sqrt{2}}\hat{j} - \frac{\sqrt{2}}{3}\hat{k}\right)$ is :

Options

1. $\frac{\sqrt{2}}{3}\hat{i} - \frac{1}{2}\hat{k}$

2. $\left(\frac{1}{\sqrt{3}} + \frac{1}{2}\right)\hat{i} + \left(\frac{1}{\sqrt{3}} - \frac{1}{3\sqrt{2}}\right)\hat{j} + \left(\frac{1}{\sqrt{3}} + \frac{\sqrt{2}}{3}\right)\hat{k}$

3. $\frac{\sqrt{2}}{3}\hat{i} + \frac{1}{3\sqrt{2}}\hat{j} - \frac{1}{2}\hat{k}$

4. $-\frac{\sqrt{2}}{3}\hat{i} + \frac{\sqrt{2}}{3}\hat{j} + \left(\frac{1}{2} + \frac{2\sqrt{2}}{3}\right)\hat{k}$

Question Type : **MCQ**
Question ID : **87827055445**
Option 1 ID : **878270218311**
Option 2 ID : **878270218309**
Option 3 ID : **878270218312**
Option 4 ID : **878270218310**
Status : **Not Answered**
Chosen Option : **--**

Q.11 Let the first three terms 2, p and q, with $q \neq 2$, of a G.P. be respectively the 7^{th}, 8^{th} and 13^{th} terms of an A.P. If the 5^{th} term of the G.P. is the n^{th} term of the A.P., then n is equal to :

Options

1. 169

2. 151

3. 163

4. 177

Question Type : **MCQ**
Question ID : **87827055436**
Option 1 ID : **878270218275**
Option 2 ID : **878270218273**
Option 3 ID : **878270218274**
Option 4 ID : **878270218276**
Status : **Not Answered**
Chosen Option : **--**

Q.12 If the solution $y=y(x)$ of the differential equation $(x^4+2x^3+3x^2+2x+2)dy-(2x^2+2x+3)dx=0$ satisfies $y(-1)=-\frac{\pi}{4}$, then $y(0)$ is equal to :

Options

1. $-\frac{\pi}{12}$
2. 0
3. $\frac{\pi}{2}$
4. $\frac{\pi}{4}$

Question Type : **MCQ**
Question ID : **87827055441**
Option 1 ID : **878270218296**
Option 2 ID : **878270218295**
Option 3 ID : **878270218294**
Option 4 ID : **878270218293**
Status : **Not Answered**
Chosen Option : **--**

Q.13 Let α and β be the sum and the product of all the non-zero solutions of the equation $(\bar{z})^2+|z|=0$, $z \in \mathbf{C}$. Then $4(\alpha^2+\beta^2)$ is equal to :

Options

1. 8
2. 2
3. 6
4. 4

Question Type : **MCQ**
Question ID : **87827055429**
Option 1 ID : **878270218248**
Option 2 ID : **878270218245**
Option 3 ID : **878270218247**
Option 4 ID : **878270218246**
Status : **Not Answered**
Chosen Option : **--**

Q.14

The sum of all rational terms in the expansion of $\left(2^{\frac{1}{5}} + 5^{\frac{1}{3}}\right)^{15}$ is equal to :

Options

1. 6131
2. 3133
3. 931
4. 633

Question Type : **MCQ**
Question ID : **87827055435**
Option 1 ID : **878270218272**
Option 2 ID : **878270218270**
Option 3 ID : **878270218269**
Option 4 ID : **878270218271**
Status : **Not Answered**
Chosen Option : **--**

Q.15

If 2 and 6 are the roots of the equation $ax^2+bx+1=0$, then the quadratic equation, whose roots are $\frac{1}{2a+b}$ and $\frac{1}{6a+b}$, is :

Options

1. $2x^2+11x+12=0$
2. $x^2+8x+12=0$
3. $4x^2+14x+12=0$
4. $x^2+10x+16=0$

Question Type : **MCQ**
Question ID : **87827055430**
Option 1 ID : **878270218251**
Option 2 ID : **878270218249**
Option 3 ID : **878270218250**
Option 4 ID : **878270218252**
Status : **Not Answered**
Chosen Option : **--**

Q.16 Let $f(x)=x^5+2e^{x/4}$ for all $x \in \mathbf{R}$. Consider a function $g(x)$ such that $(gof)(x)=x$ for all $x \in \mathbf{R}$. Then the value of $8g'(2)$ is :

Options

1. 2
2. 4
3. 16
4. 8

Question Type : **MCQ**
Question ID : **87827055438**
Option 1 ID : **878270218281**
Option 2 ID : **878270218282**
Option 3 ID : **878270218284**
Option 4 ID : **878270218283**
Status : **Not Answered**
Chosen Option : **--**

Q.17 Let the point, on the line passing through the points P(1, −2, 3) and Q (5, −4, 7), farther from the origin and at a distance of 9 units from the point P, be (α, β, γ). Then $\alpha^2+\beta^2+\gamma^2$ is equal to :

Options

1. 155
2. 160
3. 150
4. 165

Question Type : **MCQ**
Question ID : **87827055444**
Option 1 ID : **878270218308**
Option 2 ID : **878270218307**
Option 3 ID : **878270218305**
Option 4 ID : **878270218306**
Status : **Not Answered**
Chosen Option : **--**

Q.18 If the domain of the function $\sin^{-1}\left(\frac{3x-22}{2x-19}\right)+\log_e\left(\frac{3x^2-8x+5}{x^2-3x-10}\right)$ is $(\alpha, \beta]$, then $3\alpha+10\beta$ is equal to :

Options

1. 98
2. 100
3. 97
4. 95

Question Type : **MCQ**
Question ID : **87827055428**
Option 1 ID : **878270218243**
Option 2 ID : **878270218244**
Option 3 ID : **878270218242**
Option 4 ID : **878270218241**
Status : **Not Answered**
Chosen Option : **--**

Q.19 The vertices of a triangle are A(−1, 3), B(−2, 2) and C(3, −1). A new triangle is formed by shifting the sides of the triangle by one unit inwards. Then the equation of the side of the new triangle nearest to origin is :

Options

1. $x+y-(2-\sqrt{2})=0$
2. $x+y+(2-\sqrt{2})=0$
3. $-x+y-(2-\sqrt{2})=0$
4. $x-y-(2+\sqrt{2})=0$

Question Type : **MCQ**
Question ID : **87827055443**
Option 1 ID : **878270218301**
Option 2 ID : **878270218302**
Option 3 ID : **878270218304**
Option 4 ID : **878270218303**
Status : **Not Answered**
Chosen Option : **--**

Q.20

Let $\alpha \in (0, \infty)$ and $A = \begin{bmatrix} 1 & 2 & \alpha \\ 1 & 0 & 1 \\ 0 & 1 & 2 \end{bmatrix}$. If $\det(\text{adj}(2A - A^T) \cdot \text{adj}(A - 2A^T)) = 2^8$, then $(\det(A))^2$ is equal to :

Options

1. 36
2. 49
3. 1
4. 16

Question Type : **MCQ**
Question ID : **87827055432**
Option 1 ID : **878270218259**
Option 2 ID : **878270218260**
Option 3 ID : **878270218257**
Option 4 ID : **878270218258**
Status : **Not Answered**
Chosen Option : **--**

Section : **Mathematics Section B**

Q.21

Let A be a square matrix of order 2 such that $|A| = 2$ and the sum of its diagonal elements is -3. If the points (x, y) satisfying $A^2 + xA + yI = O$ lie on a hyperbola, whose transverse axis is parallel to the x-axis, eccentricity is e and the length of the latus rectum is l, then $e^4 + l^4$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055454**
Status : **Not Answered**

Q.22

In a survey of 220 students of a higher secondary school, it was found that at least 125 and at most 130 students studied Mathematics; at least 85 and at most 95 studied Physics; at least 75 and at most 90 studied Chemistry; 30 studied both Physics and Chemistry; 50 studied both Chemistry and Mathematics; 40 studied both Mathematics and Physics and 10 studied none of these subjects. Let m and n respectively be the least and the most number of students who studied all the three subjects. Then $m + n$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055448**
Status : **Not Answered**

Q.23

If $\int_0^{\frac{\pi}{4}} \frac{\sin^2 x}{1 + \sin x \cos x} dx = \frac{1}{a}\log_e\left(\frac{a}{3}\right) + \frac{\pi}{b\sqrt{3}}$, where $a, b \in \mathbf{N}$, then $a + b$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055452**
Status : **Not Answered**

Q.24

Let $a = 1 + \frac{{}^2C_2}{3!} + \frac{{}^3C_2}{4!} + \frac{{}^4C_2}{5!} + \ldots,$

$$b = 1 + \frac{{}^1C_0 + {}^1C_1}{1!} + \frac{{}^2C_0 + {}^2C_1 + {}^2C_2}{2!} + \frac{{}^3C_0 + {}^3C_1 + {}^3C_2 + {}^3C_3}{3!} + \ldots.$$

Then $\frac{2b}{a^2}$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055450**
Status : **Not Answered**

Q.25

Let ABC be a triangle of area $15\sqrt{2}$ and the vectors $\overrightarrow{AB} = \hat{i} + 2\hat{j} - 7\hat{k}$, $\overrightarrow{BC} = a\hat{i} + b\hat{j} + c\hat{k}$ and $\overrightarrow{AC} = 6\hat{i} + d\hat{j} - 2\hat{k}$, $d > 0$. Then the square of the length of the largest side of the triangle ABC is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055457**
Status : **Not Answered**

Q.26

Let A be a 3×3 matrix of non-negative real elements such that $A\begin{bmatrix}1\\1\\1\end{bmatrix} = 3\begin{bmatrix}1\\1\\1\end{bmatrix}$.

Then the maximum value of det(A) is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055449**
Status : **Not Answered**

Q.27

Let the solution $y = y(x)$ of the differential equation $\frac{dy}{dx} - y = 1 + 4\sin x$ satisfy $y(\pi) = 1$. Then $y\left(\frac{\pi}{2}\right) + 10$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055453**
Status : **Not Answered**

Q.28 Let the length of the focal chord PQ of the parabola $y^2 = 12x$ be 15 units. If the distance of PQ from the origin is p, then $10p^2$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055455**
Status : **Not Answered**

Q.29 If the shortest distance between the lines $\frac{x+2}{2} = \frac{y+3}{3} = \frac{z-5}{4}$ and $\frac{x-3}{1} = \frac{y-2}{-3} = \frac{z+4}{2}$ is $\frac{38}{3\sqrt{5}}$ k, and $\int_0^k [x^2]\,dx = \alpha - \sqrt{\alpha}$, where $[x]$ denotes the greatest integer function, then $6\alpha^3$ is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055456**
Status : **Not Answered**

Q.30 If $\lim\limits_{x\to 1} \frac{(5x+1)^{1/3} - (x+5)^{1/3}}{(2x+3)^{1/2} - (x+4)^{1/2}} = \frac{m\sqrt{5}}{n(2n)^{2/3}}$, where gcd(m, n) = 1, then 8m + 12n is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055451**
Status : **Not Answered**

Section : **Physics Section A**

Q.31 An electron is projected with uniform velocity along the axis inside a current carrying long solenoid. Then :

Options

1. the electron path will be circular about the axis.

2. the electron will be accelerated along the axis.

3. the electron will experience a force at 45° to the axis and execute a helical path.

4. the electron will continue to move with uniform velocity along the axis of the solenoid.

Question Type : **MCQ**
Question ID : **87827055469**
Option 1 ID : **878270218376**
Option 2 ID : **878270218375**
Option 3 ID : **878270218377**
Option 4 ID : **878270218378**
Status : **Not Answered**
Chosen Option : --

Q.32 Which of the following nuclear fragments corresponding to nuclear fission between neutron $\left({}_{0}^{1}\mathrm{n}\right)$ and uranium isotope $\left({}_{92}^{235}\mathrm{U}\right)$ is correct :

Options

1. ${}_{56}^{144}\mathrm{Ba} + {}_{36}^{89}\mathrm{Kr} + 4{}_{0}^{1}\mathrm{n}$

2. ${}_{51}^{153}\mathrm{Sb} + {}_{41}^{99}\mathrm{Nb} + 3{}_{0}^{1}\mathrm{n}$

3. ${}_{56}^{144}\mathrm{Ba} + {}_{36}^{89}\mathrm{Kr} + 3{}_{0}^{1}\mathrm{n}$

4. ${}_{56}^{140}\mathrm{Xe} + {}_{38}^{94}\mathrm{Sr} + 3{}_{0}^{1}\mathrm{n}$

Question Type : **MCQ**
Question ID : **87827055474**
Option 1 ID : **878270218398**
Option 2 ID : **878270218395**
Option 3 ID : **878270218396**
Option 4 ID : **878270218397**
Status : **Answered**
Chosen Option : **3**

Q.33 The resistances of the platinum wire of a platinum resistance thermometer at the ice point and steam point are 8 Ω and 10 Ω respectively. After inserting in a hot bath of temperature 400°C, the resistance of platinum wire is :

Options

1. 8 Ω

2. 16 Ω

3. 10 Ω

4. 2 Ω

Question Type : **MCQ**
Question ID : **87827055468**
Option 1 ID : **878270218371**
Option 2 ID : **878270218373**
Option 3 ID : **878270218372**
Option 4 ID : **878270218374**
Status : **Not Answered**
Chosen Option : **--**

Q.34 A body travels 102.5 m in n^{th} second and 115.0 m in $(n+2)^{th}$ second. The acceleration is :

Options

1. $6.25\ m/s^2$
2. $5\ m/s^2$
3. $9\ m/s^2$
4. $12.5\ m/s^2$

Question Type : **MCQ**
Question ID : **87827055461**
Option 1 ID : **878270218344**
Option 2 ID : **878270218343**
Option 3 ID : **878270218346**
Option 4 ID : **878270218345**
Status : **Not Answered**
Chosen Option : **--**

Q.35 The equation of stationary wave is :

$$y = 2a \sin\left(\frac{2\pi nt}{\lambda}\right)\cos\left(\frac{2\pi x}{\lambda}\right).$$

Which of the following is NOT correct :

Options

1. The dimensions of x is [L]
2. The dimensions of n/λ is [T]
3. The dimensions of nt is [L]
4. The dimensions of n is $[LT^{-1}]$

Question Type : **MCQ**
Question ID : **87827055458**
Option 1 ID : **878270218332**
Option 2 ID : **878270218334**
Option 3 ID : **878270218331**
Option 4 ID : **878270218333**
Status : **Answered**
Chosen Option : **2**

Q.36 The electric field in an electromagnetic wave is given by $\vec{E} = \hat{i}\ 40\cos\omega\left(t - z/c\right) NC^{-1}$. The magnetic field induction of this wave is (in SI unit) :

Options

1. $\vec{B} = \hat{j}\ \frac{40}{c}\cos\omega\left(t - z/c\right)$

2. $\vec{B} = \hat{j}\ 40\cos\omega\left(t - z/c\right)$

3. $\vec{B} = \hat{i}\ \frac{40}{c}\cos\omega\left(t - z/c\right)$

4. $\vec{B} = \hat{k}\ \frac{40}{c}\cos\omega\left(t - z/c\right)$

Question Type : **MCQ**
Question ID : **87827055471**
Option 1 ID : **878270218385**
Option 2 ID : **878270218383**
Option 3 ID : **878270218386**
Option 4 ID : **878270218384**
Status : **Answered**
Chosen Option : **4**

Q.37 To measure the internal resistance of a battery, potentiometer is used. For $R = 10\ \Omega$, the balance point is observed at $l = 500$ cm and for $R = 1\ \Omega$ the balance point is observed at $l = 400$ cm. The internal resistance of the battery is approximately :

Options

1. $0.4\ \Omega$

2. $0.1\ \Omega$

3. $0.2\ \Omega$

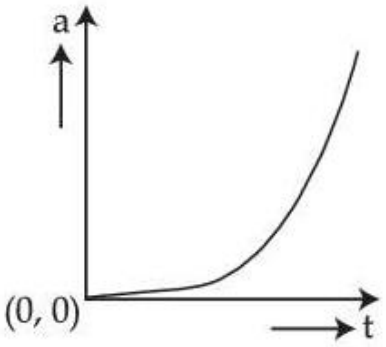
4. $0.3\ \Omega$

Question Type : **MCQ**
Question ID : **87827055477**
Option 1 ID : **878270218410**
Option 2 ID : **878270218407**
Option 3 ID : **878270218408**
Option 4 ID : **878270218409**
Status : **Not Answered**
Chosen Option : **--**

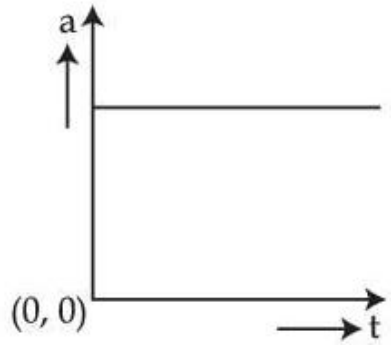
Q.38 A wooden block, initially at rest on the ground, is pushed by a force which increases linearly with time t. Which of the following curve best describes acceleration of the block with time :

Options

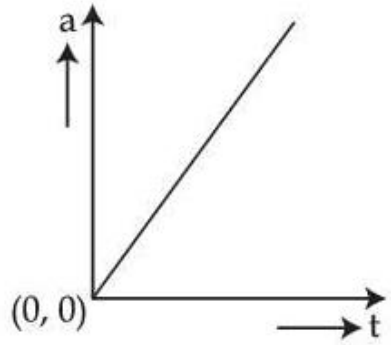
1.



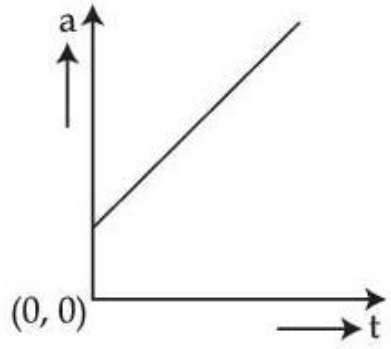
2.



3.

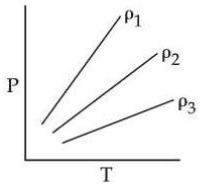


4.



Question Type : **MCQ**
Question ID : **87827055460**
Option 1 ID : **878270218339**
Option 2 ID : **878270218342**
Option 3 ID : **878270218340**
Option 4 ID : **878270218341**
Status : **Answered**
Chosen Option : **3**

Q.39 P-T diagram of an ideal gas having three different densities ρ_1, ρ_2, ρ_3 (in three different cases) is shown in the figure. Which of the following is correct :



Options

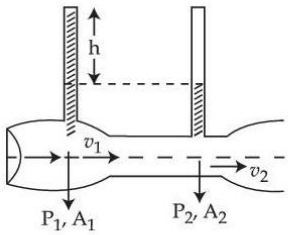
1. $\rho_1 > \rho_2$
2. $\rho_1 = \rho_2 = \rho_3$
3. $\rho_2 < \rho_3$
4. $\rho_1 < \rho_2$

Question Type : **MCQ**
Question ID : **87827055466**
Option 1 ID : **878270218366**
Option 2 ID : **878270218365**
Option 3 ID : **878270218364**
Option 4 ID : **878270218363**
Status : **Answered**
Chosen Option : **1**

Q.40 Given below are two statements :

Statement I : When speed of liquid is zero everywhere, pressure difference at any two points depends on equation $P_1 - P_2 = \rho g(h_2 - h_1)$.

Statement II : In ventury tube shown $2gh = v_1^2 - v_2^2$



In the light of the above statements, choose the **most appropriate** answer from the options given below.

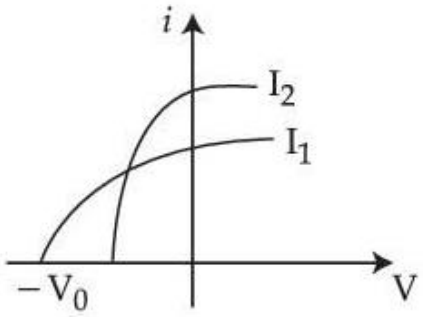
Options

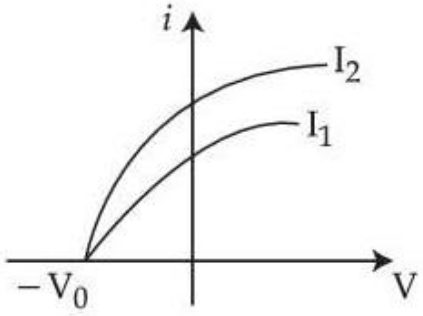
1. Both **Statement I** and **Statement II** are incorrect.
2. **Statement I** is correct but **Statement II** is incorrect.
3. **Statement I** is incorrect but **Statement II** is correct.
4. Both **Statement I** and **Statement II** are correct.

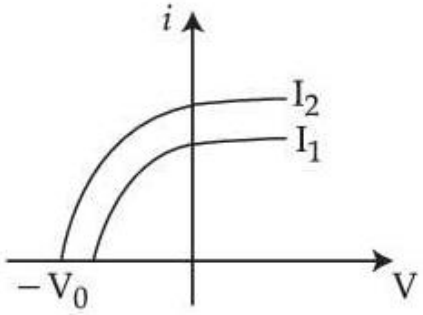
Question Type : **MCQ**
Question ID : **87827055464**
Option 1 ID : **878270218356**
Option 2 ID : **878270218357**
Option 3 ID : **878270218358**
Option 4 ID : **878270218355**
Status : **Answered**
Chosen Option : **3**

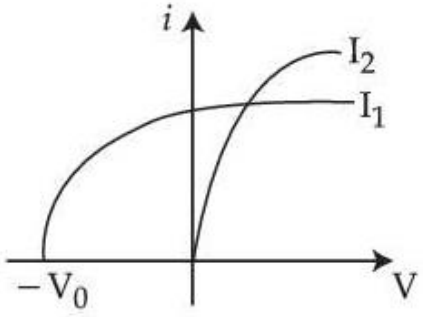
Q.41 Which figure shows the correct variation of applied potential difference (V) with photoelectric current (I) at two different intensities of light ($I_1 < I_2$) of same wavelengths :

Options

1. 

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **87827055473**
Option 1 ID : **878270218391**
Option 2 ID : **878270218392**
Option 3 ID : **878270218394**
Option 4 ID : **878270218393**
Status : **Marked For Review**
Chosen Option : **1**

Q.42 If a rubber ball falls from a height h and rebounds upto the height of h/2. The percentage loss of total energy of the initial system as well as velocity ball before it strikes the ground, respectively, are :

Options

1. $50\%, \sqrt{\frac{gh}{2}}$

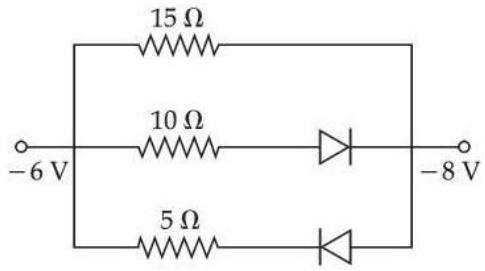
2. $50\%, \sqrt{gh}$

3. $50\%, \sqrt{2gh}$

4. $40\%, \sqrt{2gh}$

Question Type : **MCQ**
Question ID : **87827055462**
Option 1 ID : **878270218350**
Option 2 ID : **878270218347**
Option 3 ID : **878270218348**
Option 4 ID : **878270218349**
Status : **Answered**
Chosen Option : **2**

Q.43 The value of net resistance of the network as shown in the given figure is :



Options

1. $6\ \Omega$

2. $(15/4)\ \Omega$

3. $(30/11)\ \Omega$

4. $(5/2)\ \Omega$

Question Type : **MCQ**
Question ID : **87827055475**
Option 1 ID : **878270218402**
Option 2 ID : **878270218400**
Option 3 ID : **878270218399**
Option 4 ID : **878270218401**
Status : **Answered**
Chosen Option : **1**

Q.44 The co-ordinates of a particle moving in x-y plane are given by :
$x = 2 + 4t,\ y = 3t + 8t^2$.
The motion of the particle is :

Options 1.

uniformly accelerated having motion along a straight line.

2.

uniformly accelerated having motion along a parabolic path.

3. non-uniformly accelerated.

4. uniform motion along a straight line.

Question Type : **MCQ**
Question ID : **87827055459**
Option 1 ID : **878270218336**
Option 2 ID : **878270218337**
Option 3 ID : **878270218335**
Option 4 ID : **878270218338**
Status : **Answered**
Chosen Option : **2**

Q.45 On celcius scale the temperature of body increases by 40°C. The increase in temperature on Fahrenheit scale is :

Options 1. 75°F

2. 70°F

3. 72°F

4. 68°F

Question Type : **MCQ**
Question ID : **87827055465**
Option 1 ID : **878270218361**
Option 2 ID : **878270218360**
Option 3 ID : **878270218359**
Option 4 ID : **878270218362**
Status : **Not Answered**
Chosen Option : **--**

Q.46 In an ac circuit, the instantaneous current is zero, when the instantaneous voltage is maximum. In this case, the source may be connected to :

A. pure inductor.
B. pure capacitor.
C. pure resistor.
D. combination of an inductor and capacitor.

Choose the **correct** answer from the options given below :

Options

1. A, B and D only
2. B, C and D only
3. A, B and C only
4. A and B only

Question Type : **MCQ**
Question ID : **87827055470**
Option 1 ID : **878270218381**
Option 2 ID : **878270218380**
Option 3 ID : **878270218379**
Option 4 ID : **878270218382**
Status : **Not Answered**
Chosen Option : **--**

Q.47 An effective power of a combination of 5 identical convex lenses which are kept in contact along the principal axis is 25 D. Focal length of each of the convex lens is :

Options

1. 25 cm
2. 500 cm
3. 20 cm
4. 50 cm

Question Type : **MCQ**
Question ID : **87827055472**
Option 1 ID : **878270218390**
Option 2 ID : **878270218389**
Option 3 ID : **878270218387**
Option 4 ID : **878270218388**
Status : **Answered**
Chosen Option : **1**

Q.48 A metal wire of uniform mass density having length L and mass M is bent to form a semicircular arc and a particle of mass m is placed at the centre of the arc. The gravitational force on the particle by the wire is :

Options

1. $\frac{GmM\pi^2}{L^2}$

2. $\frac{2GmM\pi}{L^2}$

3. 0

4. $\frac{GMm\pi}{2L^2}$

Question Type : **MCQ**
Question ID : **87827055463**
Option 1 ID : **878270218352**
Option 2 ID : **878270218353**
Option 3 ID : **878270218351**
Option 4 ID : **878270218354**
Status : **Answered**
Chosen Option : **3**

Q.49 In an experiment to measure focal length (*f*) of convex lens, the least counts of the measuring scales for the position of object (u) and for the position of image (v) are Δu and Δv, respectively. The error in the measurement of the focal length of the convex lens will be :

Options

1. $f^2\left[\frac{\Delta u}{u^2}+\frac{\Delta v}{v^2}\right]$

2. $\frac{\Delta u}{u}+\frac{\Delta v}{v}$

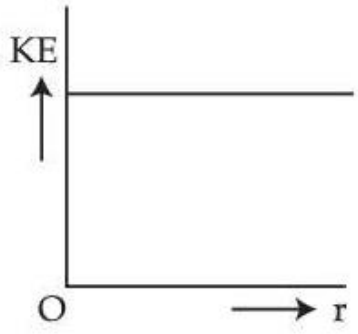
3. $2f\left[\frac{\Delta u}{u}+\frac{\Delta v}{v}\right]$

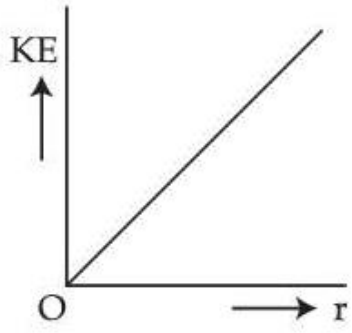
4. $f\left[\frac{\Delta u}{u}+\frac{\Delta v}{v}\right]$

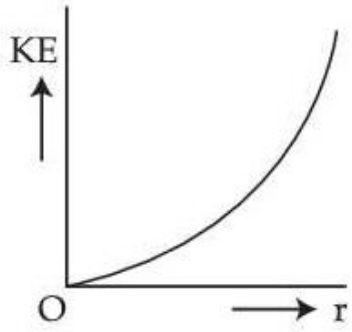
Question Type : **MCQ**
Question ID : **87827055476**
Option 1 ID : **878270218406**
Option 2 ID : **878270218405**
Option 3 ID : **878270218404**
Option 4 ID : **878270218403**
Status : **Not Answered**
Chosen Option : **--**

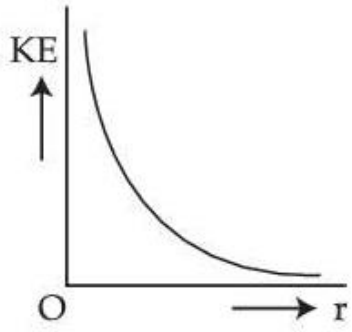
Q.50 An infinitely long positively charged straight thread has a linear charge density λ Cm^{-1}. An electron revolves along a circular path having axis along the length of the wire. The graph that correctly represents the variation of the kinetic energy of electron as a function of radius of circular path from the wire is :

Options

1.


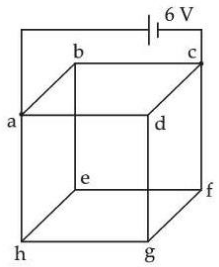
2.


3.


4.


Question Type : **MCQ**
Question ID : **87827055467**
Option 1 ID : **878270218370**
Option 2 ID : **878270218369**
Option 3 ID : **878270218368**
Option 4 ID : **878270218367**
Status : **Not Answered**
Chosen Option : **--**

Q.51 Twelve wires each having resistance 2 Ω are joined to form a cube. A battery of 6 V emf is joined across point a and c. The voltage difference between e and f is _____ V.



Given --
Answer :

Question Type : **SA**
Question ID : **87827055483**
Status : **Not Answered**

Q.52 A soap bubble is blown to a diameter of 7 cm. 36960 erg of work is done in blowing it further. If surface tension of soap solution is 40 dyne/cm then the new radius is _____ cm Take $\left(\pi = \frac{22}{7}\right)$.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055480**
Status : **Not Answered**

Q.53 A alternating current at any instant is given by $i = \left[6 + \sqrt{56}\sin(100\pi t + \pi/3)\right]$ A. The *rms* value of the current is _____ A.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055485**
Status : **Not Answered**

Q.54 An infinite plane sheet of charge having uniform surface charge density $+\sigma_s$ C/m^2 is placed on *x*-*y* plane. Another infinitely long line charge having uniform linear charge density $+\lambda_e$ C/m is placed at $z = 4$ m plane and parallel to *y*-axis. If the magnitude values $|\sigma_s| = 2\,|\lambda_e|$ then at point (0, 0, 2), the ratio of magnitudes of electric field values due to sheet charge to that of line charge is $\pi\sqrt{n} : 1$. The value of n is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055482**
Status : **Not Answered**

Q.55 A solid sphere and a hollow cylinder roll up without slipping on same inclined plane with same initial speed v. The sphere and the cylinder reaches upto maximum heights h_1 and h_2, respectively, above the initial level. The ratio $h_1 : h_2$ is $\frac{n}{10}$. The value of n is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055479**
Status : **Not Answered**

Q.56 A hydrogen atom changes its state from n = 3 to n = 2. Due to recoil, the percentage change in the wave length of emitted light is approximately 1×10^{-n}. The value of n is _____.
[Given Rhc = 13.6 eV, hc = 1242 eV nm, h = 6.6×10^{-34} J s mass of the hydrogenatom = 1.6×10^{-27} kg]

Given --
Answer :

Question Type : **SA**
Question ID : **87827055487**
Status : **Not Answered**

Q.57 Two wavelengths λ_1 and λ_2 are used in Young's double slit experiment. $\lambda_1 = 450$ nm and $\lambda_2 = 650$ nm. The minimum order of fringe produced by λ_2 which overlaps with the fringe produced by λ_1 is n. The value of n is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055486**
Status : **Not Answered**

Q.58 An elastic spring under tension of 3 N has a length a. Its length is b under tension 2 N. For its length $(3a - 2b)$, the value of tension will be _____ N.

Given **5.0**
Answer :

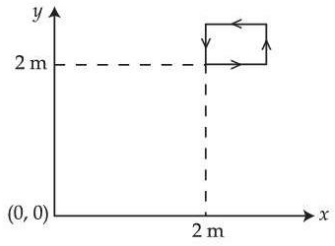
Question Type : **SA**
Question ID : **87827055481**
Status : **Answered**

Q.59 Two forces $\vec{F}_1$ and $\vec{F}_2$ are acting on a body. One force has magnitude thrice that of the other force and the resultant of the two forces is equal to the force of larger magnitude. The angle between $\vec{F}_1$ and $\vec{F}_2$ is $\cos^{-1}\left(\frac{1}{n}\right)$. The value of |n| is _____.

Given **6.0**
Answer :

Question Type : **SA**
Question ID : **87827055478**
Status : **Answered**

Q.60 The magnetic field existing in a region is given by $\vec{B} = 0.2\,(1 + 2x)\hat{k}\,T$. A square loop of edge 50 cm carrying 0.5 A current is placed in x-y plane with its edges parallel to the x-y axes, as shown in figure. The magnitude of the net magnetic force experienced by the loop is _____ mN.



Given --
Answer :

Question Type : **SA**
Question ID : **87827055484**
Status : **Not Answered**

Section : **Chemistry Section A**

Q.61 In the precipitation of the iron group (III) in qualitative analysis, ammonium chloride is added before adding ammonium hydroxide to :

Options

1. increase concentration of Cl^- ions
2. prevent interference by phosphate ions
3. decrease concentration of ^-OH ions
4. increase concentration of NH_4^+ ions

Question Type : **MCQ**
Question ID : **87827055499**
Option 1 ID : **878270218467**
Option 2 ID : **878270218466**
Option 3 ID : **878270218465**
Option 4 ID : **878270218468**
Status : **Answered**
Chosen Option : **3**

Q.62 Number of elements from the following that CANNOT form compounds with valencies which match with their respective group valencies is _____.
B, C, N, S, O, F, P, Al, Si

Options

1. 3
2. 6
3. 7
4. 5

Question Type : **MCQ**
Question ID : **87827055494**
Option 1 ID : **878270218446**
Option 2 ID : **878270218447**
Option 3 ID : **878270218448**
Option 4 ID : **878270218445**
Status : **Answered**
Chosen Option : **4**

Q.63 What pressure (bar) of H_2 would be required to make emf of hydrogen electrode zero in pure water at 25°C ?

Options

1. 0.5
2. 10^{-7}
3. 1
4. 10^{-14}

Question Type : **MCQ**
Question ID : **87827055492**
Option 1 ID : **878270218440**
Option 2 ID : **878270218437**
Option 3 ID : **878270218439**
Option 4 ID : **878270218438**
Status : **Answered**
Chosen Option : **3**

Q.64 Given below are two statements :

Statements I : Acidity of α-hydrogens of aldehydes and ketones is responsible for Aldol reaction.

Statement II : Reaction between benzaldehyde and ethanal will NOT give Cross - Aldol product.

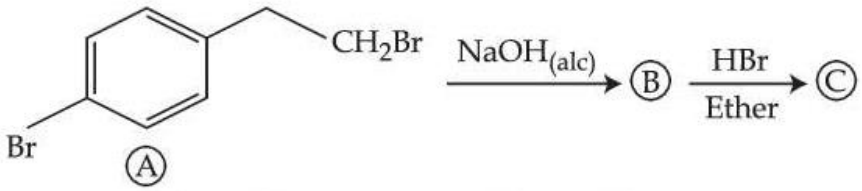
In the light of the above statements, choose the **most appropriate** answer from the options given below :

Options

1. Both **Statement I** and **Statement II** are incorrect
2. Both **Statement I** and **Statement II** are correct
3. **Statement I** is correct but **Statement II** is incorrect
4. **Statement I** is incorrect but **Statement II** is correct

Question Type : **MCQ**
Question ID : **87827055505**
Option 1 ID : **878270218490**
Option 2 ID : **878270218489**
Option 3 ID : **878270218491**
Option 4 ID : **878270218492**
Status : **Answered**
Chosen Option : **2**

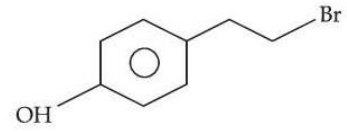
Q.65

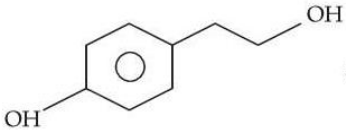


Identify (B) and (C) and how are (A) and (C) related ?

(B) (C)

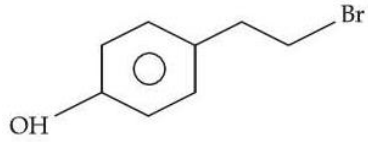
Options 1.

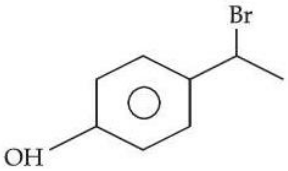




; functional group isomers

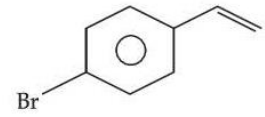
2.

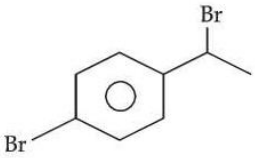




; Derivative

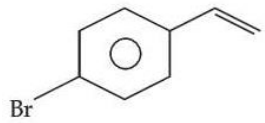
3.

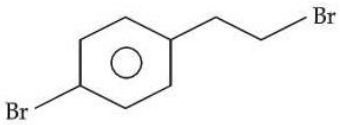




; positon isomers

4.

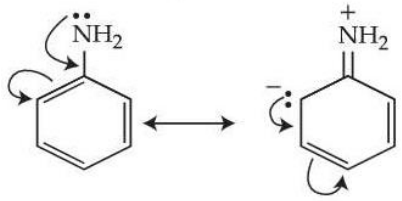
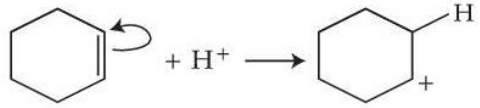
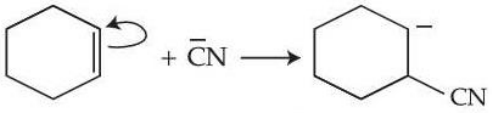
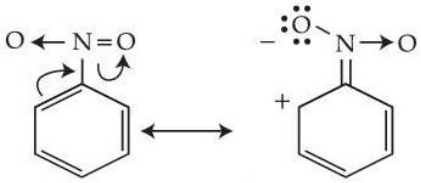




; chain isomers

Question Type : **MCQ**
Question ID : **87827055503**
Option 1 ID : **878270218481**
Option 2 ID : **878270218484**
Option 3 ID : **878270218482**
Option 4 ID : **878270218483**
Status : **Marked For Review**
Chosen Option : **3**

Q.66 Match **List I** with **List II** :

List - I **Mechanism steps**		**List - II** **Effect**
(A)		(I) − E effect
(B)		(II) − R effect
(C)		(III) + E effect
(D)		(IV) + R effect

Choose the **correct** answer from the options given below :

Options

1. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
2. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

Question Type : **MCQ**
Question ID : **87827055501**
Option 1 ID : **878270218476**
Option 2 ID : **878270218473**
Option 3 ID : **878270218475**
Option 4 ID : **878270218474**
Status : **Answered**
Chosen Option : **2**

Q.67 The correct sequence of ligands in the order of decreasing field strength is :

Options

1. $^{-}OH > F^{-} > NH_3 > CN^{-}$

2. $NCS^{-} > EDTA^{4-} > CN^{-} > CO$

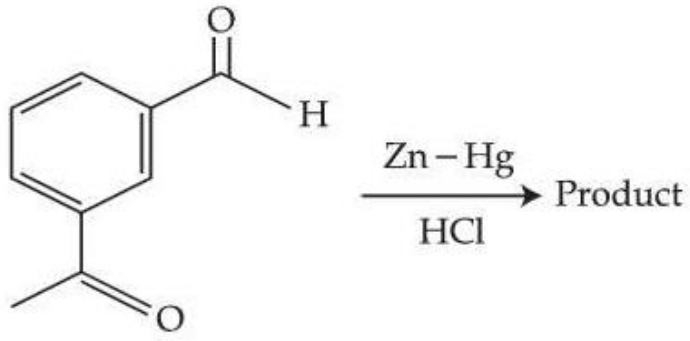
3. $S^{2-} > {}^{-}OH > EDTA^{4-} > CO$

4. $CO > H_2O > F^{-} > S^{2-}$

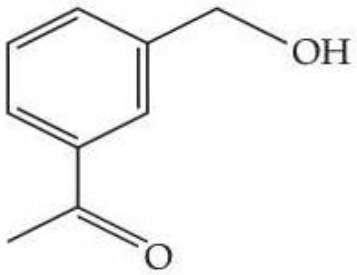
Question Type : **MCQ**
Question ID : **87827055497**
Option 1 ID : **878270218459**
Option 2 ID : **878270218458**
Option 3 ID : **878270218460**
Option 4 ID : **878270218457**
Status : **Marked For Review**
Chosen Option : **2**

Q.68

Identify the product in the following reaction :



Options

1.


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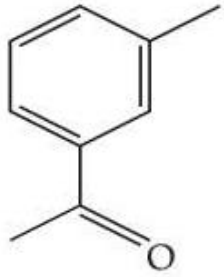
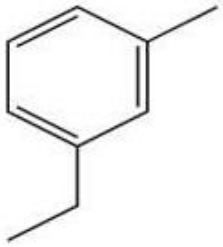
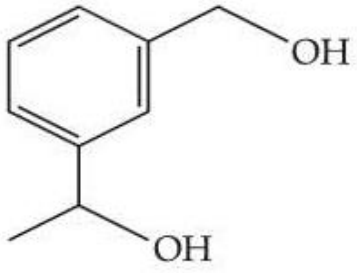


3.


4.


Question Type : **MCQ**
Question ID : **87827055506**
Option 1 ID : **878270218495**
Option 2 ID : **878270218494**
Option 3 ID : **878270218493**
Option 4 ID : **878270218496**
Status : **Not Answered**

Chosen Option : --

Q.69 What will be the decreasing order of basic strength of the following conjugate bases ?

$^{-}OH, R\bar{O}, CH_3C\bar{O}O, C\bar{l}$

Options

1. $C\bar{l} > {}^{-}OH > R\bar{O} > CH_3C\bar{O}O$
2. $^{-}OH > R\bar{O} > CH_3C\bar{O}O > C\bar{l}$
3. $R\bar{O} > {}^{-}OH > CH_3C\bar{O}O > C\bar{l}$
4. $C\bar{l} > R\bar{O} > {}^{-}OH > CH_3C\bar{O}O$

Question Type : **MCQ**
Question ID : **87827055490**
Option 1 ID : **878270218431**
Option 2 ID : **878270218429**
Option 3 ID : **878270218430**
Option 4 ID : **878270218432**
Status : **Marked For Review**
Chosen Option : **3**

Q.70 Which one of the following molecules has maximum dipole moment ?

Options

1. NH_3
2. CH_4
3. PF_5
4. NF_3

Question Type : **MCQ**
Question ID : **87827055489**
Option 1 ID : **878270218426**
Option 2 ID : **878270218427**
Option 3 ID : **878270218428**
Option 4 ID : **878270218425**
Status : **Answered**
Chosen Option : **1**

Q.71 Number of molecules/ions from the following in which the central atom is involved in sp^3 hybridization is _____.

$NO_3^-, BCl_3, ClO_2^-, ClO_3$

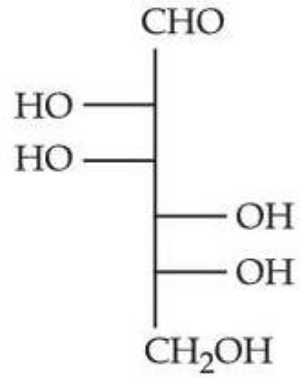
Options

1. 3
2. 2
3. 4
4. 1

Question Type : **MCQ**
Question ID : **87827055495**
Option 1 ID : **878270218451**
Option 2 ID : **878270218450**
Option 3 ID : **878270218452**
Option 4 ID : **878270218449**
Status : **Marked For Review**
Chosen Option : **1**

Q.72 Which of the following is the correct structure of L-Glucose ?

Options

1.


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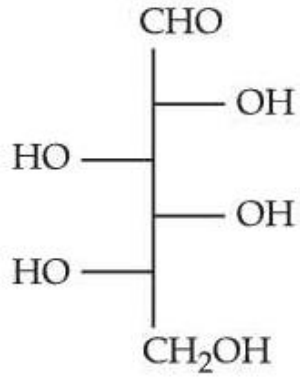

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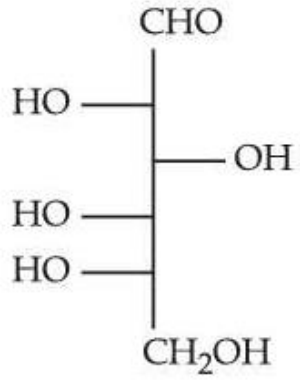
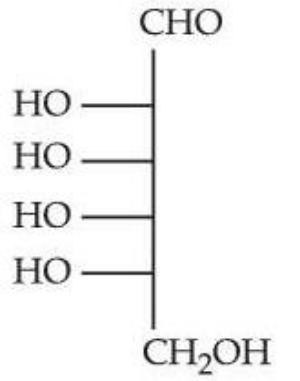


4.


Question Type : **MCQ**
Question ID : **87827055507**
Option 1 ID : **878270218498**
Option 2 ID : **878270218497**
Option 3 ID : **878270218499**
Option 4 ID : **878270218500**

Status : **Marked For Review**
Chosen Option : **2**

Q.73 The Molarity (M) of an aqueous solution containing 5.85 g of NaCl in 500 mL water is :
(Given : Molar Mass Na : 23 and Cl : 35.5 $gmol^{-1}$)

Options

1. 2
2. 4
3. 0.2
4. 20

Question Type : **MCQ**
Question ID : **87827055488**
Option 1 ID : **878270218424**
Option 2 ID : **878270218421**
Option 3 ID : **878270218423**
Option 4 ID : **878270218422**
Status : **Answered**
Chosen Option : **3**

Q.74 The correct order of first ionization enthalpy values of the following elements is :
(A) O
(B) N
(C) Be
(D) F
(E) B
Choose the correct answer from the options given below :

Options

1. E < C < A < B < D
2. B < D < C < E < A
3. A < B < D < C < E
4. C < E < A < B < D

Question Type : **MCQ**
Question ID : **87827055493**
Option 1 ID : **878270218443**
Option 2 ID : **878270218442**
Option 3 ID : **878270218441**
Option 4 ID : **878270218444**
Status : **Answered**
Chosen Option : **4**

Q.75 The element which shows only one oxidation state other than its elemental form is :

Options

1. Scandium
2. Titanium
3. Nickel
4. Cobalt

Question Type : **MCQ**
Question ID : **87827055496**
Option 1 ID : **878270218454**
Option 2 ID : **878270218455**
Option 3 ID : **878270218456**
Option 4 ID : **878270218453**
Status : **Answered**
Chosen Option : **1**

Q.76 Number of complexes from the following with even number of unpaired "d" electrons is _____.
$[V(H_2O)_6]^{3+}$, $[Cr(H_2O)_6]^{2+}$, $[Fe(H_2O)_6]^{3+}$, $[Ni(H_2O)_6]^{3+}$, $[Cu(H_2O)_6]^{2+}$
[Given atomic numbers : V = 23, Cr = 24, Fe = 26, Ni = 28 Cu = 29]

Options

1. 2
2. 1
3. 5
4. 4

Question Type : **MCQ**
Question ID : **87827055498**
Option 1 ID : **878270218462**
Option 2 ID : **878270218461**
Option 3 ID : **878270218464**
Option 4 ID : **878270218463**
Status : **Answered**
Chosen Option : **1**

Q.77

Which among the following is **incorrect** statement ?

Options

1. Electromeric effect dominates over inductive effect

2. The electromeric effect is, temporary effect

3. Hydrogen ion (H^+) shows negative electromeric effect

4. The organic compound shows electromeric effect in the presence of the reagent only.

Question Type : **MCQ**
Question ID : **87827055502**
Option 1 ID : **878270218479**
Option 2 ID : **878270218478**
Option 3 ID : **878270218480**
Option 4 ID : **878270218477**
Status : **Answered**
Chosen Option : **4**

Q.78

Identify the correct set of reagents or reaction conditions 'X' and 'Y' in the following set of transformation.

$$CH_3-CH_2-CH_2-Br \xrightarrow{'X'} \text{Product} \xrightarrow{'Y'} CH_3-\underset{\underset{Br}{|}}{CH}-CH_3$$

Options

1. X = dil.aq. NaOH, 20°C, Y = $Br_2/CHCl_3$

2. X = conc.alc. NaOH, 80°C, Y = HBr/acetic acid

3. X = dil.aq. NaOH, 20°C, Y = HBr/acetic acid

4. X = conc.alc. NaOH, 80°C, Y = $Br_2/CHCl_3$

Question Type : **MCQ**
Question ID : **87827055504**
Option 1 ID : **878270218487**
Option 2 ID : **878270218486**
Option 3 ID : **878270218485**
Option 4 ID : **878270218488**
Status : **Not Answered**
Chosen Option : **--**

Q.79 One of the commonly used electrode is calomel electrode. Under which of the following categories, calomel electrode comes ?

Options

1. Metal ion - Metal electrodes
2. Gas - Ion electrodes
3. Metal - Insoluble Salt - Anion electrodes
4. Oxidation - Reduction electrodes

Question Type : **MCQ**
Question ID : **87827055491**
Option 1 ID : **878270218434**
Option 2 ID : **878270218433**
Option 3 ID : **878270218435**
Option 4 ID : **878270218436**
Status : **Marked For Review**
Chosen Option : **4**

Q.80 Which of the following nitrogen containing compound does not give Lassaigne's test ?

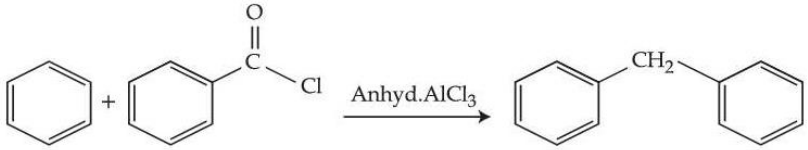
Options

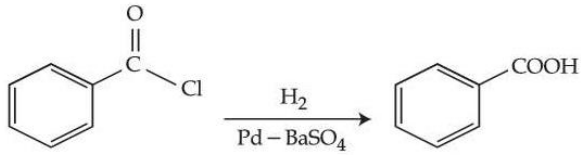
1. Phenyl hydrazine
2. Urea
3. Glycene
4. Hydrazine

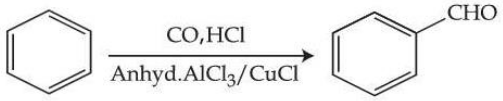
Question Type : **MCQ**
Question ID : **87827055500**
Option 1 ID : **878270218472**
Option 2 ID : **878270218469**
Option 3 ID : **878270218470**
Option 4 ID : **878270218471**
Status : **Not Answered**
Chosen Option : **--**

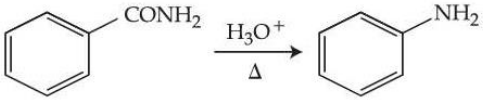
Section : **Chemistry Section B**

Q.81 The number of the correct reaction(s) among the following is _____.

(A) 

(B) 

(C) 

(D) 

Given --
Answer :

Question Type : **SA**
Question ID : **87827055516**
Status : **Not Answered**

Q.82 2.5 g of a non-volatile, non-electrolyte is dissolved in 100 g of water at 25°C. The solution showed a boiling point elevation by 2°C. Assuming the solute concentration is negligible with respect to the solvent concentration, the vapor pressure of the resulting aqueous solution is _____ mm of Hg (nearest integer)
[Given : Molal boiling point elevation constant of water (K_b) = 0.52 K. kg mol^{-1},
1 atm pressure = 760 mm of Hg, molar mass of water = 18 g mol^{-1}]

Given --
Answer :

Question Type : **SA**
Question ID : **87827055511**
Status : **Not Answered**

Q.83 The enthalpy of formation of ethane (C_2H_6) from ethylene by addition of hydrogen where the bond-energies of C – H, C – C, C = C, H – H are 414 kJ, 347 kJ, 615 kJ and 435 kJ respectively is – _____ kJ

Given **560.0**
Answer :

Question Type : **SA**
Question ID : **87827055510**
Status : **Answered**

Q.84 X g of ethylamine is subjected to reaction with $NaNO_2$/HCl followed by water; evolved dinitrogen gas which occupied 2.24 L volume at STP. X is _____ $\times 10^{-1}$ g.

Given --
Answer :

Question Type : **SA**
Question ID : **87827055517**
Status : **Not Answered**

Q.85 Number of molecules/species from the following having one unpaired electron is _____.
O_2, O_2^{-1}, NO, CN^{-1}, O_2^{2-}

Given **2.0**
Answer :

Question Type : **SA**
Question ID : **87827055509**
Status : **Answered**

Q.86 The number of different chain isomers for C_7H_{16} is _____.

Given **--**
Answer :

Question Type : **SA**
Question ID : **87827055515**
Status : **Not Answered**

Q.87 The de-Broglie's wavelength of an electron in the 4^{th} orbit is _____ πa_0. (a_0 = Bohr's radius)

Given **0.5**
Answer :

Question Type : **SA**
Question ID : **87827055508**
Status : **Answered**

Q.88 Only 2 mL of $KMnO_4$ solution of unknown molarity is required to reach the end point of a titration of 20 mL of oxalic acid (2 M) in acidic medium. The molarity of $KMnO_4$ solution should be _____ M.

Given **--**
Answer :

Question Type : **SA**
Question ID : **87827055514**
Status : **Not Answered**

Q.89 Consider the following transformation involving first order elementary reaction in each step at constant temperature as shown below.

$$A + B \underset{\text{Step 3}}{\overset{\text{Step 1}}{\rightleftharpoons}} C \xrightarrow{\text{Step 2}} P$$

Some details of the above reactions are listed below.

Step	Rate constant (sec^{-1})	Activation energy (kJ mol^{-1})
1	k_1	300
2	k_2	200
3	k_3	Ea_3

If the overall rate constant of the above transformation (k) is given as $k = \frac{k_1 k_2}{k_3}$ and the overall activation energy (E_a) is 400 kJ mol^{-1}, then the value of Ea_3 is _____ kJ mol^{-1} (nearest integer)

Given **150.0**
Answer :

Question Type : **SA**
Question ID : **87827055512**
Status : **Answered**

Q.90 Consider the following reaction
$MnO_2 + KOH + O_2 \rightarrow A + H_2O$.
Product 'A' in neutral or acidic medium disproportionate to give products 'B' and 'C' along with water. The sum of spin-only magnetic moment values of B and C is _____ BM. (nearest integer) (Given atomic number of Mn is 25)

Given **8**
Answer :

Question Type : **SA**
Question ID : **87827055513**
Status : **Answered**