

# NTA JEE 2024\_27 29 30 31 Jan 1st Feb 2024

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Test Date	01/02/2024
Test Time	9:00 AM - 12:00 PM
Subject	B. Tech

Section : Mathematics Section A

- Q.1** For  $0 < \theta < \pi/2$ , if the eccentricity of the hyperbola  $x^2 - y^2 \operatorname{cosec}^2 \theta = 5$  is  $\sqrt{7}$  times eccentricity of the ellipse  $x^2 \operatorname{cosec}^2 \theta + y^2 = 5$ , then the value of  $\theta$  is :

Options

1.  $\frac{\pi}{3}$
2.  $\frac{\pi}{4}$
3.  $\frac{5\pi}{12}$
4.  $\frac{\pi}{6}$

Question Type : MCQ  
 Question ID : 9561771047  
 Option 1 ID : 9561772056  
 Option 2 ID : 9561772055  
 Option 3 ID : 9561772058  
 Option 4 ID : 9561772057  
 Status : Not Answered  
 Chosen Option : --

- Q.2** Let  $S = \{x \in \mathbb{R} : (\sqrt{3} + \sqrt{2})^x + (\sqrt{3} - \sqrt{2})^x = 10\}$ . Then the number of elements in  $S$  is :

Options

1. 1
2. 4
3. 2
4. 0

Question Type : MCQ  
 Question ID : 9561771037  
 Option 1 ID : 9561772016  
 Option 2 ID : 9561772018  
 Option 3 ID : 9561772017  
 Option 4 ID : 9561772015  
 Status : Answered  
 Chosen Option : 3

**Q.3** The area enclosed by the curves  $xy+4y=16$  and  $x+y=6$  is equal to :

Options

1.  $30 - 32 \log_e 2$
2.  $30 - 28 \log_e 2$
3.  $32 - 30 \log_e 2$
4.  $28 - 30 \log_e 2$

Question Type : MCQ

Question ID : 9561771044

Option 1 ID : 9561772044

Option 2 ID : 9561772046

Option 3 ID : 9561772045

Option 4 ID : 9561772043

Status : Not Answered

Chosen Option : --

**Q.4**

If  $\tan A = \frac{1}{\sqrt{x(x^2 + x + 1)}}$ ,  $\tan B = \frac{\sqrt{x}}{\sqrt{x^2 + x + 1}}$  and

$\tan C = (x^{-3} + x^{-2} + x^{-1})^{1/2}$ ,  $0 < A, B, C < \frac{\pi}{2}$ , then  $A + B$  is equal to :

Options

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

Question Type : MCQ

Question ID : 9561771055

Option 1 ID : 9561772088

Option 2 ID : 9561772087

Option 3 ID : 9561772089

Option 4 ID : 9561772090

Status : Not Answered

Chosen Option : --

**Q.5** If n is the number of ways five different employees can sit into four indistinguishable offices where any office may have any number of persons including zero, then n is equal to :

**Options**

1. 53
2. 47
3. 43
4. 51

Question Type : **MCQ**

Question ID : **9561771039**

Option 1 ID : **9561772025**

Option 2 ID : **9561772024**

Option 3 ID : **9561772026**

Option 4 ID : **9561772023**

Status : **Not Answered**

Chosen Option : --

**Q.6** If the system of equations

$$2x + 3y - z = 5$$

$$x + \alpha y + 3z = -4$$

$$3x - y + \beta z = 7$$

has infinitely many solutions, then  $13 \alpha\beta$  is equal to \_\_\_\_\_.

**Options**

1. 1120
2. 1220
3. 1210
4. 1110

Question Type : **MCQ**

Question ID : **9561771040**

Option 1 ID : **9561772028**

Option 2 ID : **9561772029**

Option 3 ID : **9561772027**

Option 4 ID : **9561772030**

Status : **Not Answered**

Chosen Option : --

- Q.7** A bag contains 8 balls, whose colours are either white or black. 4 balls are drawn at random without replacement and it was found that 2 balls are white and other 2 balls are black. The probability that the bag contains equal number of white and black balls is :

Options

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

Question Type : MCQ

Question ID : 9561771052

Option 1 ID : 9561772075

Option 2 ID : 9561772078

Option 3 ID : 9561772076

Option 4 ID : 9561772077

Status : Not Answered

Chosen Option : --

**Q.8**

Let  $f: \mathbf{R} \rightarrow \mathbf{R}$  and  $g: \mathbf{R} \rightarrow \mathbf{R}$  be defined as  $f(x) = \begin{cases} \log_e x, & x > 0 \\ e^{-x}, & x \leq 0 \end{cases}$  and  $g(x) = \begin{cases} x, & x \geq 0 \\ e^x, & x < 0 \end{cases}$ . Then,  
 $gof: \mathbf{R} \rightarrow \mathbf{R}$  is :

Options

1. onto but not one-one
2. both one-one and onto
3. one-one but not onto
4. neither one-one nor onto

Question Type : MCQ

Question ID : 9561771049

Option 1 ID : 9561772064

Option 2 ID : 9561772065

Option 3 ID : 9561772063

Option 4 ID : 9561772066

Status : Not Answered

Chosen Option : --

**Q.9**

If  $A = \begin{bmatrix} \sqrt{2} & 1 \\ -1 & \sqrt{2} \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$ ,  $C = ABA^T$  and  $X = A^TC^2A$ , then  $\det X$  is equal to :

**Options**

1. 729
2. 27
3. 243
4. 891

Question Type : **MCQ**Question ID : **9561771038**Option 1 ID : **9561772020**Option 2 ID : **9561772019**Option 3 ID : **9561772022**Option 4 ID : **9561772021**Status : **Not Answered**

Chosen Option : --

**Q.10**

Let  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ ,  $a > b$  be an ellipse, whose eccentricity is  $\frac{1}{\sqrt{2}}$  and the length of the latusrectum is

$\sqrt{14}$ . Then the square of the eccentricity of  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$  is :

**Options**

1. 5/2
2. 3
3. 3/2
4. 7/2

Question Type : **MCQ**Question ID : **9561771048**Option 1 ID : **9561772061**Option 2 ID : **9561772060**Option 3 ID : **9561772059**Option 4 ID : **9561772062**Status : **Answered**Chosen Option : **2**

**Q.11**

If  $5f(x) + 4f\left(\frac{1}{x}\right) = x^2 - 2$ ,  $\forall x \neq 0$  and  $y = 9x^2f(x)$ , then  $y$  is strictly increasing in :

**Options**

1.  $\left(0, \frac{1}{\sqrt{5}}\right) \cup \left(\frac{1}{\sqrt{5}}, \infty\right)$
2.  $\left(-\infty, \frac{1}{\sqrt{5}}\right) \cup \left(0, \frac{1}{\sqrt{5}}\right)$
3.  $\left(-\frac{1}{\sqrt{5}}, 0\right) \cup \left(\frac{1}{\sqrt{5}}, \infty\right)$
4.  $\left(-\frac{1}{\sqrt{5}}, 0\right) \cup \left(0, \frac{1}{\sqrt{5}}\right)$

Question Type : **MCQ**Question ID : **9561771042**Option 1 ID : **9561772038**Option 2 ID : **9561772036**Option 3 ID : **9561772037**Option 4 ID : **9561772035**Status : **Not Answered**

Chosen Option : --

**Q.12**

Let  $y = y(x)$  be the solution of the differential equation  $\frac{dy}{dx} = 2x(x+y)^3 - x(x+y) - 1$ ,  $y(0) = 1$ .

Then,  $\left(\frac{1}{\sqrt{2}} + y\left(\frac{1}{\sqrt{2}}\right)\right)^2$  equals :

**Options**

1.  $\frac{4}{4 + \sqrt{e}}$
2.  $\frac{2}{1 + \sqrt{e}}$
3.  $\frac{1}{2 - \sqrt{e}}$
4.  $\frac{3}{3 - \sqrt{e}}$

Question Type : **MCQ**Question ID : **9561771046**Option 1 ID : **9561772054**Option 2 ID : **9561772052**Option 3 ID : **9561772051**Option 4 ID : **9561772053**Status : **Not Answered**

Chosen Option : --

**Q.13**

The value of the integral  $\int_0^{\frac{\pi}{4}} \frac{x \, dx}{\sin^4(2x) + \cos^4(2x)}$  equals :

**Options**

1.  $\frac{\sqrt{2} \pi^2}{16}$

2.  $\frac{\sqrt{2} \pi^2}{64}$

3.  $\frac{\sqrt{2} \pi^2}{32}$

4.  $\frac{\sqrt{2} \pi^2}{8}$

Question Type : MCQ

Question ID : 9561771045

Option 1 ID : 9561772047

Option 2 ID : 9561772050

Option 3 ID : 9561772048

Option 4 ID : 9561772049

Status : Answered

Chosen Option : 2

**Q.14**

Let  $\vec{a} = -5\hat{i} + \hat{j} - 3\hat{k}$ ,  $\vec{b} = \hat{i} + 2\hat{j} - 4\hat{k}$  and  $\vec{c} = ((\vec{a} \times \vec{b}) \times \hat{i}) \times \hat{i}$ . Then

$\vec{c} \cdot (-\hat{i} + \hat{j} + \hat{k})$  is equal to :

**Options**

1. -13

2. -15

3. -10

4. -12

Question Type : MCQ

Question ID : 9561771054

Option 1 ID : 9561772085

Option 2 ID : 9561772086

Option 3 ID : 9561772083

Option 4 ID : 9561772084

Status : Answered

Chosen Option : 4

**Q.15**

If the shortest distance between the lines  $\frac{x-\lambda}{-2} = \frac{y-2}{1} = \frac{z-1}{1}$  and  $\frac{x-\sqrt{3}}{1} = \frac{y-1}{-2} = \frac{z-2}{1}$  is 1, then the sum of all possible values of  $\lambda$  is :

**Options**

1. 0
2.  $-2\sqrt{3}$
3.  $2\sqrt{3}$
4.  $3\sqrt{3}$

Question Type : MCQ

Question ID : 9561771051

Option 1 ID : 9561772072

Option 2 ID : 9561772073

Option 3 ID : 9561772074

Option 4 ID : 9561772071

Status : Not Answered

Chosen Option : --

**Q.16**

Let  $S = \{z \in C : |z-1|=1 \text{ and } (\sqrt{2}-1)(z + \bar{z}) - i(z - \bar{z}) = 2\sqrt{2}\}$ . Let  $z_1, z_2 \in S$  be such that

$|z_1| = \max_{z \in S} |z|$  and  $|z_2| = \min_{z \in S} |z|$ . Then  $|\sqrt{2} z_1 - z_2|^2$  equals :

**Options**

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

Question Type : MCQ

Question ID : 9561771036

Option 1 ID : 9561772014

Option 2 ID : 9561772013

Option 3 ID : 9561772012

Option 4 ID : 9561772011

Status : Not Answered

Chosen Option : --

**Q.17**

Let  $3, a, b, c$  be in A.P. and  $3, a-1, b+1, c+9$  be in G.P.

Then, the arithmetic mean of  $a, b$  and  $c$  is :

**Options**

1. 11
2. -1
3. -4
4. 13

Question Type : **MCQ**Question ID : **9561771041**Option 1 ID : **9561772031**Option 2 ID : **9561772032**Option 3 ID : **9561772034**Option 4 ID : **9561772033**Status : **Not Answered**

Chosen Option : --

**Q.18**

Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be defined as :

$$f(x) = \begin{cases} \frac{a - b \cos 2x}{x^2}; & x < 0 \\ x^2 + cx + 2; & 0 \leq x \leq 1 \\ 2x + 1; & x > 1 \end{cases}$$

If  $f$  is continuous everywhere in  $\mathbb{R}$  and  $m$  is the number of points where  $f$  is NOT differential then  $m+a+b+c$  equals :

**Options**

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

Question Type : **MCQ**Question ID : **9561771043**Option 1 ID : **9561772040**Option 2 ID : **9561772041**Option 3 ID : **9561772042**Option 4 ID : **9561772039**Status : **Not Answered**

Chosen Option : --

- Q.19** Let the median and the mean deviation about the median of 7 observation 170, 125, 230, 190, 210, a, b be 170 and  $\frac{205}{7}$  respectively. Then the mean deviation about the mean of these 7 observations is :

- Options**
1. 32
  2. 31
  3. 30
  4. 28

Question Type : **MCQ**  
 Question ID : **9561771053**  
 Option 1 ID : **9561772082**  
 Option 2 ID : **9561772081**  
 Option 3 ID : **9561772080**  
 Option 4 ID : **9561772079**  
 Status : **Not Answered**  
 Chosen Option : --

- Q.20** Let  $C : x^2 + y^2 = 4$  and  $C' : x^2 + y^2 - 4\lambda x + 9 = 0$  be two circles. If the set of all values of  $\lambda$  so that the circles  $C$  and  $C'$  intersect at two distinct points, is  $R - [a, b]$ , then the point  $(8a + 12, 16b - 20)$  lies on the curve :

- Options**
1.  $5x^2 - y^2 = -11$
  2.  $x^2 - 4y^2 = 7$
  3.  $6x^2 + y^2 = 42$
  4.  $x^2 + 2y^2 - 5x + 6y = 3$

Question Type : **MCQ**  
 Question ID : **9561771050**  
 Option 1 ID : **9561772067**  
 Option 2 ID : **9561772069**  
 Option 3 ID : **9561772068**  
 Option 4 ID : **9561772070**  
 Status : **Not Answered**  
 Chosen Option : --

Section : Mathematics Section B

- Q.21** The number of elements in the set  $S = \{(x, y, z) : x, y, z \in \mathbb{Z}, x+2y+3z=42, x, y, z \geq 0\}$  equals \_\_\_\_\_.

Given 42  
 Answer :

Question Type : **SA**  
 Question ID : **9561771059**  
 Status : **Answered**

**Q.22** If the Coefficient of  $x^{30}$  in the expansion of  $\left(1 + \frac{1}{x}\right)^6 (1 + x^2)^7 (1 - x^3)^8 ; x \neq 0$  is  $\alpha$ , then  $|\alpha|$  equals \_\_\_\_\_.

Given --  
Answer :

Question Type : SA  
Question ID : 9561771058  
Status : Not Answered

**Q.23** Let the line of the shortest distance between the lines

$$L_1 : \vec{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(\hat{i} - \hat{j} + \hat{k}) \text{ and}$$

$$L_2 : \vec{r} = (4\hat{i} + 5\hat{j} + 6\hat{k}) + \mu(\hat{i} + \hat{j} - \hat{k})$$

intersect  $L_1$  and  $L_2$  at P and Q respectively. If  $(\alpha, \beta, \gamma)$  is the mid point of the line segment PQ, then  $2(\alpha + \beta + \gamma)$  is equal to \_\_\_\_\_.

Given --  
Answer :

Question Type : SA  
Question ID : 9561771065  
Status : Not Answered

**Q.24** Let the line  $L : \sqrt{2}x + y = \alpha$  pass through the point of the intersection P (in the first quadrant) of the circle  $x^2 + y^2 = 3$  and the parabola  $x^2 = 2y$ . Let the line L touch two circles  $C_1$  and  $C_2$  of equal radius  $2\sqrt{3}$ . If the centres  $Q_1$  and  $Q_2$  of the circles  $C_1$  and  $C_2$  lie on the y-axis, then the square of the area of the triangle  $PQ_1Q_2$  is equal to \_\_\_\_\_.

Given --  
Answer :

Question Type : SA  
Question ID : 9561771064  
Status : Not Answered

**Q.25** If  $\int_{-\pi/2}^{\pi/2} \frac{8\sqrt{2} \cos x \, dx}{(1 + e^{\sin x})(1 + \sin^4 x)} = \alpha\pi + \beta \log_e (3 + 2\sqrt{2})$ , where  $\alpha, \beta$  are integers, then  $\alpha^2 + \beta^2$  equals \_\_\_\_\_.

Given --  
Answer :

Question Type : SA  
Question ID : 9561771062  
Status : Not Answered

**Q.26** Let  $P = \{z \in \mathbb{C} : |z + 2 - 3i| \leq 1\}$  and  $Q = \{z \in \mathbb{C} : z(1+i) + \bar{z}(1-i) \leq -8\}$ . Let in  $P \cap Q$ ,  $|z - 3 + 2i|$  be maximum and minimum at  $z_1$  and  $z_2$  respectively. If  $|z_1|^2 + 2|z_2|^2 = \alpha + \beta\sqrt{2}$ , where  $\alpha, \beta$  are integers, then  $\alpha + \beta$  equals \_\_\_\_\_.

Given --  
Answer :

Question Type : SA  
Question ID : 9561771057  
Status : Not Answered

**Q.27**

Let  $\{x\}$  denote the fractional part of  $x$  and  $f(x) = \frac{\cos^{-1}(1 - \{x\}^2)\sin^{-1}(1 - \{x\})}{\{x\} - \{x\}^3}, x \neq 0$ . If  $L$  and

$R$  respectively denotes the left hand limit and the right hand limit of  $f(x)$  at  $x=0$ , then  $\frac{32}{\pi^2} (L^2 + R^2)$   
is equal to \_\_\_\_\_.

Given --

Answer :

Question Type : **SA**Question ID : **9561771061**Status : **Not Answered****Q.28**

Let  $3, 7, 11, 15, \dots, 403$  and  $2, 5, 8, 11, \dots, 404$  be two arithmetic progressions. Then the sum, of  
the common terms in them, is equal to \_\_\_\_\_.

Given --

Answer :

Question Type : **SA**Question ID : **9561771060**Status : **Not Answered****Q.29**

Let  $A = \{1, 2, 3, \dots, 20\}$ . Let  $R_1$  and  $R_2$  two relation on  $A$  such that

$R_1 = \{(a, b) : b \text{ is divisible by } a\}$

$R_2 = \{(a, b) : a \text{ is an integral multiple of } b\}$ .

Then, number of elements in  $R_1 - R_2$  is equal to \_\_\_\_\_.

Given --

Answer :

Question Type : **SA**Question ID : **9561771056**Status : **Not Answered****Q.30**

If  $x = x(t)$  is the solution of the differential equation  $(t+1)dx = (2x + (t+1)^4) dt$ ,  $x(0) = 2$ , then,  $x(1)$   
equals \_\_\_\_\_.

Given --

Answer :

Question Type : **SA**Question ID : **9561771063**Status : **Not Answered**

Section : Physics Section A

**Q.31** The minimum energy required by a hydrogen atom in ground state to emit radiation in Balmer series is nearly :

Options

1. 1.5 eV
2. 12.1 eV
3. 13.6 eV
4. 1.9 eV

Question Type : MCQ

Question ID : 9561771082

Option 1 ID : 9561772166

Option 2 ID : 9561772167

Option 3 ID : 9561772165

Option 4 ID : 9561772168

Status : Answered

Chosen Option : 4

**Q.32** The dimensional formula of angular impulse is :

Options

1.  $[M L T^{-1}]$
2.  $[M L^{-2} T^{-1}]$
3.  $[M L^2 T^{-2}]$
4.  $[M L^2 T^{-1}]$

Question Type : MCQ

Question ID : 9561771066

Option 1 ID : 9561772102

Option 2 ID : 9561772103

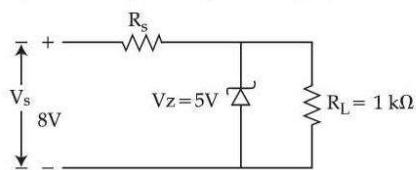
Option 3 ID : 9561772101

Option 4 ID : 9561772104

Status : Answered

Chosen Option : 4

**Q.33** In the given circuit if the power rating of Zener diode is 10 mW, the value of series resistance  $R_s$  to regulate the input unregulated supply is :



Options

1.  $5\text{ k}\Omega$
2.  $1\text{ k}\Omega$
3.  $10\text{ }\Omega$
4.  $10\text{ k}\Omega$

Question Type : MCQ

Question ID : 9561771083

Option 1 ID : 9561772172

Option 2 ID : 9561772170

Option 3 ID : 9561772171

Option 4 ID : 9561772169

Status : Answered

Chosen Option : 2

**Q.34** A ball of mass 0.5 kg is attached to a string of length 50 cm. The ball is rotated on a horizontal circular path about its vertical axis. The maximum tension that the string can bear is 400 N. The maximum possible value of angular velocity of the ball in rad/s is :

Options

1. 40
2. 1000
3. 1600
4. 20

Question Type : MCQ

Question ID : 9561771069

Option 1 ID : 9561772114

Option 2 ID : 9561772116

Option 3 ID : 9561772113

Option 4 ID : 9561772115

Status : Answered

Chosen Option : 1

**Q.35** 10 divisions on the main scale of a Vernier calliper coincide with 11 divisions on the Vernier scale. If each division on the main scale is of 5 units, the least count of the instrument is :

Options

1.  $\frac{10}{11}$

2.  $\frac{5}{11}$

3.  $\frac{1}{2}$

4.  $\frac{50}{11}$

Question Type : MCQ

Question ID : 9561771084

Option 1 ID : 9561772175

Option 2 ID : 9561772174

Option 3 ID : 9561772173

Option 4 ID : 9561772176

Status : Answered

Chosen Option : 1

**Q.36** Two identical capacitors have same capacitance C. One of them is charged to the potential V and other to the potential 2V. The negative ends of both are connected together. When the positive ends are also joined together, the decrease in energy of the combined system is :

Options

1.  $\frac{1}{4}CV^2$

2.  $2 CV^2$

3.  $\frac{1}{2}CV^2$

4.  $\frac{3}{4}CV^2$

Question Type : MCQ

Question ID : 9561771075

Option 1 ID : 9561772138

Option 2 ID : 9561772139

Option 3 ID : 9561772137

Option 4 ID : 9561772140

Status : Answered

Chosen Option : 4

**Q.37** If R is the radius of the earth and the acceleration due to gravity on the surface of earth is  $g = \pi^2 m/s^2$ , then the length of the second's pendulum at a height  $h = 2R$  from the surface of earth will be :

Options

1.  $\frac{8}{9} m$
2.  $\frac{2}{9} m$
3.  $\frac{4}{9} m$
4.  $\frac{1}{9} m$

Question Type : MCQ

Question ID : 9561771071

Option 1 ID : 9561772123

Option 2 ID : 9561772121

Option 3 ID : 9561772122

Option 4 ID : 9561772124

Status : Answered

Chosen Option : 3

**Q.38** A parallel plate capacitor has a capacitance  $C = 200 \text{ pF}$ . It is connected to 230 V ac supply with an angular frequency 300 rad/s. The rms value of conduction current in the circuit and displacement current in the capacitor respectively are :

Options

1.  $1.38 \mu\text{A}$  and  $1.38 \mu\text{A}$
2.  $13.8 \mu\text{A}$  and  $138 \mu\text{A}$
3.  $13.8 \mu\text{A}$  and  $13.8 \mu\text{A}$
4.  $14.3 \mu\text{A}$  and  $143 \mu\text{A}$

Question Type : MCQ

Question ID : 9561771079

Option 1 ID : 9561772154

Option 2 ID : 9561772156

Option 3 ID : 9561772153

Option 4 ID : 9561772155

Status : Answered

Chosen Option : 2

**Q.39** Two moles a monoatomic gas is mixed with six moles of a diatomic gas. The molar specific heat of the mixture at constant volume is :

Options

1.  $\frac{5}{2}R$

2.  $\frac{9}{4}R$

3.  $\frac{3}{2}R$

4.  $\frac{7}{4}R$

Question Type : MCQ

Question ID : 9561771074

Option 1 ID : 9561772133

Option 2 ID : 9561772134

Option 3 ID : 9561772135

Option 4 ID : 9561772136

Status : Answered

Chosen Option : 1

**Q.40** A simple pendulum of length 1 m has a wooden bob of mass 1 kg. It is struck by a bullet of mass  $10^{-2}$  kg moving with a speed of  $2 \times 10^2 \text{ ms}^{-1}$ . The bullet gets embedded into the bob. The height to which the bob rises before swinging back is. (use  $g = 10 \text{ m/s}^2$ )

Options

1. 0.20 m

2. 0.35 m

3. 0.30 m

4. 0.40 m

Question Type : MCQ

Question ID : 9561771070

Option 1 ID : 9561772117

Option 2 ID : 9561772119

Option 3 ID : 9561772118

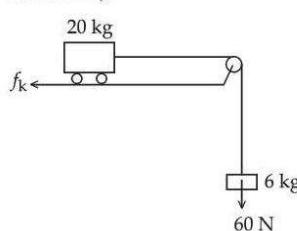
Option 4 ID : 9561772120

Status : Answered

Chosen Option : 1

**Q.41** Consider a block and trolley system as shown in figure. If the coefficient of kinetic friction between the trolley and the surface is 0.04, the acceleration of the system in  $\text{m s}^{-2}$  is :

(Consider that the string is massless and unstretchable and the pulley is also massless and frictionless) :



**Options**

1. 4
2. 1.2
3. 3
4. 2

Question Type : MCQ

Question ID : 9561771068

Option 1 ID : 9561772111

Option 2 ID : 9561772110

Option 3 ID : 9561772109

Option 4 ID : 9561772112

Status : Answered

Chosen Option : 4

**Q.42** In series LCR circuit, the capacitance is changed from  $C$  to  $4C$ . To keep the resonance frequency unchanged, the new inductance should be :

**Options**

1. increased to  $4L$
2. reduced by  $\frac{1}{4}L$
3. reduced by  $\frac{3}{4}L$
4. increased by  $2L$

Question Type : MCQ

Question ID : 9561771078

Option 1 ID : 9561772149

Option 2 ID : 9561772151

Option 3 ID : 9561772152

Option 4 ID : 9561772150

Status : Answered

Chosen Option : 3

**Q.43** A galvanometer has a resistance of  $50\ \Omega$  and it allows maximum current of  $5\ \text{mA}$ . It can be converted into voltmeter to measure upto  $100\ \text{V}$  by connecting in series a resistor of resistance :

Options

1.  $5975\ \Omega$
2.  $19950\ \Omega$
3.  $19500\ \Omega$
4.  $20050\ \Omega$

Question Type : MCQ

Question ID : 9561771077

Option 1 ID : 9561772147

Option 2 ID : 9561772145

Option 3 ID : 9561772146

Option 4 ID : 9561772148

Status : Not Answered

Chosen Option : --

**Q.44**

The pressure and volume of an ideal gas are related as  $PV^{\frac{3}{2}} = K$  (Constant). The work done when the gas is taken from state A ( $P_1, V_1, T_1$ ) to state B ( $P_2, V_2, T_2$ ) is :

Options

1.  $2(\sqrt{P_1}V_1 - \sqrt{P_2}V_2)$
2.  $2(P_1V_1 - P_2V_2)$
3.  $2(P_2V_2 - P_1V_1)$
4.  $2(P_2\sqrt{V_2} - P_1\sqrt{V_1})$

Question Type : MCQ

Question ID : 9561771073

Option 1 ID : 9561772132

Option 2 ID : 9561772131

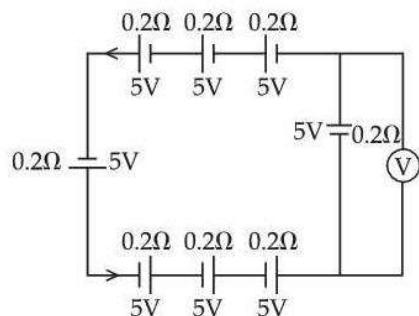
Option 3 ID : 9561772129

Option 4 ID : 9561772130

Status : Answered

Chosen Option : 2

**Q.45** The reading in the ideal voltmeter (V) shown in the given circuit diagram is :



**Options**

1. 3V
2. 10V
3. 5V
4. 0V

Question Type : MCQ

Question ID : 9561771076

Option 1 ID : 9561772142

Option 2 ID : 9561772144

Option 3 ID : 9561772141

Option 4 ID : 9561772143

Status : Answered

Chosen Option : 3

**Q.46** With rise in temperature, the Young's modulus of elasticity :

**Options**

1. increases
2. decreases
3. changes erratically
4. remains unchanged

Question Type : MCQ

Question ID : 9561771072

Option 1 ID : 9561772126

Option 2 ID : 9561772125

Option 3 ID : 9561772128

Option 4 ID : 9561772127

Status : Answered

Chosen Option : 4

**Q.47** The de Broglie wavelengths of a proton and an  $\alpha$  particle are  $\lambda$  and  $2\lambda$  respectively. The ratio of the velocities of proton and  $\alpha$  particle will be :

Options

1. 8 : 1
2. 1 : 8
3. 4 : 1
4. 1 : 2

Question Type : MCQ

Question ID : 9561771081

Option 1 ID : 9561772163

Option 2 ID : 9561772161

Option 3 ID : 9561772162

Option 4 ID : 9561772164

Status : Answered

Chosen Option : 1

**Q.48** A particle moving in a circle of radius R with uniform speed takes time T to complete one revolution. If this particle is projected with the same speed at an angle  $\theta$  to the horizontal, the maximum height attained by it is equal to 4R. The angle of projection  $\theta$  is then given by :

Options

1.  $\sin^{-1} \left[ \frac{2gT^2}{\pi^2 R} \right]^{\frac{1}{2}}$
2.  $\sin^{-1} \left[ \frac{\pi^2 R}{2gT^2} \right]^{\frac{1}{2}}$
3.  $\cos^{-1} \left[ \frac{2gT^2}{\pi^2 R} \right]^{\frac{1}{2}}$
4.  $\cos^{-1} \left[ \frac{\pi R}{2gT^2} \right]^{\frac{1}{2}}$

Question Type : MCQ

Question ID : 9561771067

Option 1 ID : 9561772106

Option 2 ID : 9561772107

Option 3 ID : 9561772105

Option 4 ID : 9561772108

Status : Answered

Chosen Option : 1

**Q.49** A monochromatic light of wavelength  $6000\text{\AA}$  is incident on the single slit of width 0.01 mm. If the diffraction pattern is formed at the focus of the convex lens of focal length 20 cm, the linear width of the central maximum is :

Options

1. 120 mm
2. 24 mm
3. 12 mm
4. 60 mm

Question Type : MCQ

Question ID : 9561771080

Option 1 ID : 9561772159

Option 2 ID : 9561772158

Option 3 ID : 9561772157

Option 4 ID : 9561772160

Status : Answered

Chosen Option : 4

**Q.50** The radius ( $r$ ), length ( $l$ ) and resistance ( $R$ ) of a metal wire was measured in the laboratory as

$$r = (0.35 \pm 0.05) \text{ cm}$$

$$R = (100 \pm 10) \text{ ohm}$$

$$l = (15 \pm 0.2) \text{ cm}$$

The percentage error in resistivity of the material of the wire is :

Options

1. 39.9%
2. 35.6%
3. 25.6%
4. 37.3%

Question Type : MCQ

Question ID : 9561771085

Option 1 ID : 9561772177

Option 2 ID : 9561772180

Option 3 ID : 9561772178

Option 4 ID : 9561772179

Status : Answered

Chosen Option : 3

Section : Physics Section B

**Q.51** A rectangular loop of sides 12 cm and 5 cm, with its sides parallel to the  $x$ -axis and  $y$ -axis respectively, moves with a velocity of 5 cm/s in the positive  $x$  axis direction, in a space containing a variable magnetic field in the positive  $z$  direction. The field has a gradient of  $10^{-3} \text{ T/cm}$  along the negative  $x$  direction and it is decreasing with time at the rate of  $10^{-3} \text{ T/s}$ . If the resistance of the loop is 6 m $\Omega$ , the power dissipated by the loop as heat is \_\_\_\_\_  $\times 10^{-9} \text{ W}$ .

Given --

Answer :

Question Type : SA

Question ID : 9561771093

Status : Not Answered

- Q.52** A plane is in level flight at constant speed and each of its two wings has an area of  $40 \text{ m}^2$ . If the speed of the air is  $180 \text{ km/h}$  over the lower wing surface and  $252 \text{ km/h}$  over the upper wing surface, the mass of the plane is \_\_\_\_\_ kg. (Take air density to be  $1 \text{ kg m}^{-3}$  and  $g = 10 \text{ ms}^{-2}$ )

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771088**  
Status : **Not Answered**

- Q.53** The distance between object and its 3 times magnified virtual image as produced by a convex lens is  $20 \text{ cm}$ . The focal length of the lens used is \_\_\_\_\_ cm.

Given 30  
Answer :

Question Type : **SA**  
Question ID : **9561771094**  
Status : **Answered**

- Q.54** The identical spheres each of mass  $2M$  are placed at the corners of a right angled triangle with mutually perpendicular sides equal to  $4 \text{ m}$  each. Taking point of intersection of these two sides as origin, the magnitude of position vector of the centre of mass of the system is  $\frac{4\sqrt{2}}{x}$ , where the value of  $x$  is \_\_\_\_\_

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771087**  
Status : **Not Answered**

- Q.55** A tuning fork resonates with a sonometer wire of length  $1 \text{ m}$  stretched with a tension of  $6 \text{ N}$ . When the tension in the wire is changed to  $54 \text{ N}$ , the same tuning fork produces 12 beats per second with it. The frequency of the tuning fork is \_\_\_\_\_ Hz.

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771089**  
Status : **Not Answered**

- Q.56** A particle is moving in one dimension (along  $x$  axis) under the action of a variable force. Its initial position was  $16 \text{ m}$  right of origin. The variation of its position ( $x$ ) with time ( $t$ ) is given as  $x = -3t^3 + 18t^2 + 16t$ , where  $x$  is in  $\text{m}$  and  $t$  is in  $\text{s}$ . The velocity of the particle when its acceleration becomes zero is \_\_\_\_\_  $\text{m/s}$ .

Given 52  
Answer :

Question Type : **SA**  
Question ID : **9561771086**  
Status : **Answered**

- Q.57** The radius of a nucleus of mass number 64 is  $4.8 \text{ fermi}$ . Then the mass number of another nucleus having radius of  $4 \text{ fermi}$  is  $\frac{1000}{x}$ , where  $x$  is \_\_\_\_\_.

Given 24  
Answer :

Question Type : **SA**  
Question ID : **9561771095**  
Status : **Answered**

- Q.58** Two identical charged spheres are suspended by strings of equal lengths. The strings make an angle  $\theta$  with each other. When suspended in water the angle remains the same. If density of the material of the sphere is 1.5 g/cc, the dielectric constant of water will be \_\_\_\_\_ (Take density of water = 1 g/cc)

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771090**  
Status : **Not Answered**

- Q.59** The current in a conductor is expressed as  $I=3t^2+4t^3$ , where I is in Ampere and t is in second. The amount of electric charge that flows through a section of the conductor during  $t=1\text{s}$  to  $t=2\text{s}$  is \_\_\_\_\_ C.

Given 22  
Answer :

Question Type : **SA**  
Question ID : **9561771091**  
Status : **Answered**

- Q.60** A regular polygon of 6 sides is formed by bending a wire of length  $4\pi$  meter. If an electric current of  $4\pi\sqrt{3}$  A is flowing through the sides of the polygon, the magnetic field at the centre of the polygon would be  $x \times 10^{-7}$  T. The value of x is \_\_\_\_\_.

Given 72  
Answer :

Question Type : **SA**  
Question ID : **9561771092**  
Status : **Answered**

Section : Chemistry Section A

**Q.61** Which of the following reactions are disproportionation reactions ?

- (A)  $\text{Cu}^+ \rightarrow \text{Cu}^{2+} + \text{Cu}$
- (B)  $3\text{MnO}_4^{2-} + 4\text{H}^+ \longrightarrow 2\text{MnO}_4^- + \text{MnO}_2 + 2\text{H}_2\text{O}$
- (C)  $2\text{KMnO}_4 \longrightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$
- (D)  $2\text{MnO}_4^- + 3\text{Mn}^{2+} + 2\text{H}_2\text{O} \longrightarrow 5\text{MnO}_2 + 4\text{H}^+$

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

**Options**

1. (A), (D)
2. (A), (B)
3. (B), (C), (D)
4. (A), (B), (C)

Question Type : **MCQ**

Question ID : **9561771103**

Option 1 ID : **9561772222**

Option 2 ID : **9561772219**

Option 3 ID : **9561772221**

Option 4 ID : **9561772220**

Status : **Answered**

Chosen Option : **4**

**Q.62** Choose the correct option for free expansion of an ideal gas under adiabatic condition from the following :

**Options**

1.  $q \neq 0, \Delta T = 0, w = 0$
2.  $q = 0, \Delta T \neq 0, w = 0$
3.  $q = 0, \Delta T < 0, w \neq 0$
4.  $q = 0, \Delta T = 0, w = 0$

Question Type : **MCQ**

Question ID : **9561771098**

Option 1 ID : **9561772200**

Option 2 ID : **9561772199**

Option 3 ID : **9561772202**

Option 4 ID : **9561772201**

Status : **Answered**

Chosen Option : **4**

**Q.63** Arrange the bonds in order of increasing ionic character in the molecules. LiF, K<sub>2</sub>O, N<sub>2</sub>, SO<sub>2</sub> and ClF<sub>3</sub>:

Options

1. LiF < K<sub>2</sub>O < ClF<sub>3</sub> < SO<sub>2</sub> < N<sub>2</sub>
2. N<sub>2</sub> < ClF<sub>3</sub> < SO<sub>2</sub> < K<sub>2</sub>O < LiF
3. ClF<sub>3</sub> < N<sub>2</sub> < SO<sub>2</sub> < K<sub>2</sub>O < LiF
4. N<sub>2</sub> < SO<sub>2</sub> < ClF<sub>3</sub> < K<sub>2</sub>O < LiF

Question Type : MCQ

Question ID : 9561771097

Option 1 ID : 9561772198

Option 2 ID : 9561772196

Option 3 ID : 9561772197

Option 4 ID : 9561772195

Status : Answered

Chosen Option : 3

**Q.64** Given below are two statements :

**Statement (I)** : The NH<sub>2</sub> group in Aniline is ortho and para directing and a powerful activating group.

**Statement (II)** : Aniline does not undergo Friedel-Craft's reaction (alkylation and acylation).

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

Question Type : MCQ

Question ID : 9561771112

Option 1 ID : 9561772256

Option 2 ID : 9561772257

Option 3 ID : 9561772255

Option 4 ID : 9561772258

Status : Answered

Chosen Option : 3

**Q.65** In Kjeldahl's method for estimation of nitrogen,  $\text{CuSO}_4$  acts as :

**Options**

1. reducing agent
2. hydrolysis agent
3. oxidising agent
4. catalytic agent

Question Type : **MCQ**

Question ID : **9561771106**

Option 1 ID : **9561772232**

Option 2 ID : **9561772234**

Option 3 ID : **9561772231**

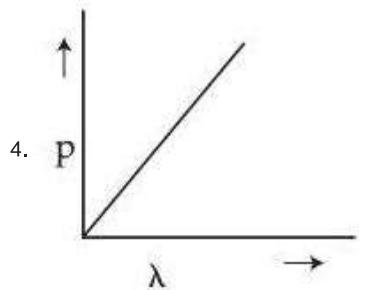
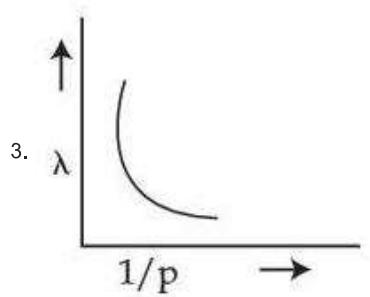
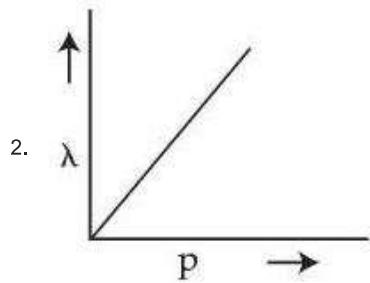
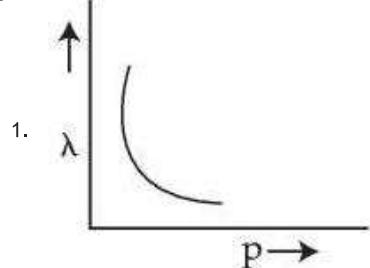
Option 4 ID : **9561772233**

Status : **Answered**

Chosen Option : **4**

**Q.66** According to the wave-particle duality of matter by de-Broglie, which of the following graph plot presents most appropriate relationship between wavelength of electron( $\lambda$ ) and momentum of electron ( $p$ ) ?

Options



Question Type : MCQ

Question ID : 9561771096

Option 1 ID : 9561772191

Option 2 ID : 9561772192

Option 3 ID : 9561772193

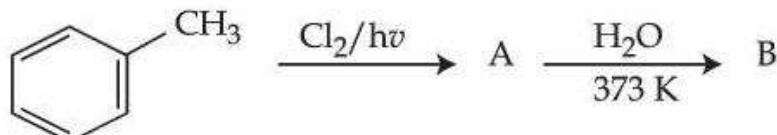
Option 4 ID : 9561772194

Status : Answered

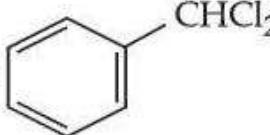
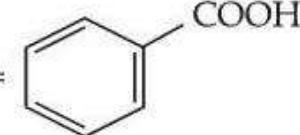
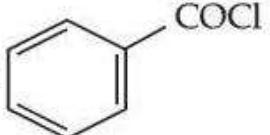
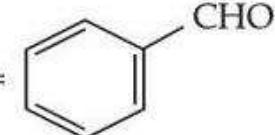
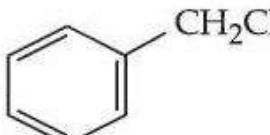
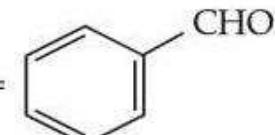
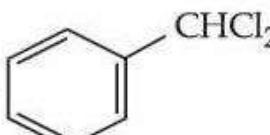
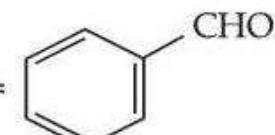
Chosen Option : 1

Q.67

Identify A and B in the following sequence of reaction



Options

- |  |  |
|--|--|
| 1. A =  | B =  |
| 2. A =  | B =   |
| 3. A =  | B =   |
| 4. A =  | B =   |

Question Type : MCQ

Question ID : 9561771110

Option 1 ID : 9561772250

Option 2 ID : 9561772248

Option 3 ID : 9561772247

Option 4 ID : 9561772249

Status : Answered

Chosen Option : 3

Q.68

Given below are two statements :

**Statement (I)** : Aminobenzene and aniline are same organic compounds.

**Statement (II)** : Aminobenzene and aniline are different organic compounds.

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. Both **Statement I** and **Statement II** are correct
- 4. **Statement I** is incorrect but **Statement II** is correct

Question Type : MCQ

Question ID : 9561771107

Option 1 ID : 9561772236

Option 2 ID : 9561772237

Option 3 ID : 9561772235

Option 4 ID : 9561772238

Status : Answered

Chosen Option : 2

**Q.69** If one strand of a DNA has the sequence ATGCTTCA, sequence of the bases in complementary strand is :

**Options**

1. CATTAGCT
2. TACGAAGT
3. GTACTTAC
4. ATGCGACT

Question Type : MCQ

Question ID : 9561771114

Option 1 ID : 9561772266

Option 2 ID : 9561772263

Option 3 ID : 9561772265

Option 4 ID : 9561772264

Status : Answered

Chosen Option : 2

**Q.70** Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

**Assertion (A)** : Haloalkanes react with KCN to form alkyl cyanides as a main product while with AgCN form isocyanide as the main product.

**Reason (R)** : KCN and AgCN both are highly ionic compounds.

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

**Options**

1. **(A)** is not correct but **(R)** is correct
- 2.
- Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**
- 3.
- Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**
4. **(A)** is correct but **(R)** is not correct

Question Type : MCQ

Question ID : 9561771109

Option 1 ID : 9561772246

Option 2 ID : 9561772243

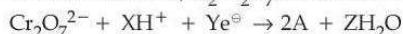
Option 3 ID : 9561772244

Option 4 ID : 9561772245

Status : Answered

Chosen Option : 2

**Q.71** In acidic medium,  $K_2Cr_2O_7$  shows oxidising action as represented in the half reaction :



X, Y, Z and A are respectively are :

**Options**

1. 14, 7, 6 and  $Cr^{3+}$
2. 8, 6, 4 and  $Cr_2O_3$
3. 14, 6, 7 and  $Cr^{3+}$
4. 8, 4, 6 and  $Cr_2O_3$

Question Type : **MCQ**

Question ID : **9561771102**

Option 1 ID : **9561772216**

Option 2 ID : **9561772215**

Option 3 ID : **9561772217**

Option 4 ID : **9561772218**

Status : **Answered**

Chosen Option : **1**

**Q.72** Match List - I with List - II.

**List - I**

(Reactions)

- (A)  $CH_3(CH_2)_5-C(=O)-OC_2H_5 \longrightarrow CH_3(CH_2)_5CHO$
- (B)  $C_6H_5COC_6H_5 \rightarrow C_6H_5CH_2C_6H_5$
- (C)  $C_6H_5CHO \rightarrow C_6H_5CH(OH)CH_3$
- (D)  $CH_3COCH_2COOC_2H_5 \rightarrow CH_3C(OH)CH_2COOC_2H_5$   
            |  
            H

**List - II**

(Reagents)

- (I)  $CH_3MgBr, H_2O$
- (II)  $Zn(Hg)$  and conc.  $HCl$
- (III)  $NaBH_4, H^+$
- (IV) DIBAL-H,  $H_2O$

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

**Options**

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

Question Type : **MCQ**

Question ID : **9561771111**

Option 1 ID : **9561772254**

Option 2 ID : **9561772252**

Option 3 ID : **9561772251**

Option 4 ID : **9561772253**

Status : **Answered**

Chosen Option : **2**

**Q.73** Which of the following complex is homoleptic ?

Options

1.  $[\text{Fe}(\text{NH}_3)_4\text{Cl}_2]^+$
2.  $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$
3.  $[\text{Ni}(\text{CN})_4]^{2-}$
4.  $[\text{Ni}(\text{NH}_3)_2\text{Cl}_2]$

Question Type : MCQ

Question ID : 9561771105

Option 1 ID : 9561772229

Option 2 ID : 9561772227

Option 3 ID : 9561772230

Option 4 ID : 9561772228

Status : Answered

Chosen Option : 3

**Q.74** Given below are two statements :

**Statement (I)** : A solution of  $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$  is green in colour.

**Statement (II)** : A solution of  $[\text{Ni}(\text{CN})_4]^{2-}$  is colourless.

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

Options 1.

**Statement I** is incorrect but **Statement II** is correct

2. Both **Statement I** and **Statement II** are correct
- 3.

**Statement I** is correct but **Statement II** is incorrect

4. Both **Statement I** and **Statement II** are incorrect

Question Type : MCQ

Question ID : 9561771104

Option 1 ID : 9561772226

Option 2 ID : 9561772223

Option 3 ID : 9561772225

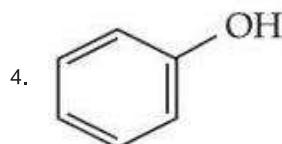
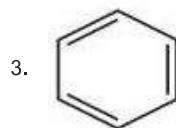
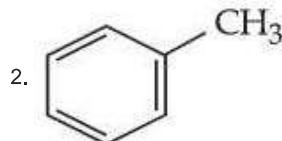
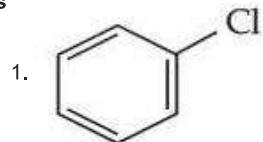
Option 4 ID : 9561772224

Status : Answered

Chosen Option : 2

**Q.75** Which of the following compound will most easily be attacked by an electrophile ?

Options



Question Type : MCQ  
Question ID : 9561771113  
Option 1 ID : 9561772260  
Option 2 ID : 9561772262  
Option 3 ID : 9561772259  
Option 4 ID : 9561772261  
Status : Answered  
Chosen Option : 2

**Q.76** Ionic reactions with organic compounds proceed through :

- (A) homolytic bond cleavage
- (B) heterolytic bond cleavage
- (C) free radical formation
- (D) primary free radical
- (E) secondary free radical

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

Options

- 1. (A) only
- 2. (B) only
- 3. (D) and (E) only
- 4. (C) only

Question Type : MCQ  
Question ID : 9561771108  
Option 1 ID : 9561772239  
Option 2 ID : 9561772240  
Option 3 ID : 9561772242  
Option 4 ID : 9561772241  
Status : Answered  
Chosen Option : 1

**Q.77** In case of isoelectronic species the size of  $F^-$ , Ne and  $Na^+$  is affected by :

**Options** 1. Principal quantum number (n)

2. Electron-electron interaction in the outer orbitals
3. None of the factors because their size is the same
4. Nuclear charge (z)

Question Type : MCQ

Question ID : 9561771100

Option 1 ID : 9561772207

Option 2 ID : 9561772209

Option 3 ID : 9561772210

Option 4 ID : 9561772208

Status : Answered

Chosen Option : 2

**Q.78** We have three aqueous solutions of NaCl labelled as 'A', 'B' and 'C' with concentration 0.1 M, 0.01 M and 0.001 M, respectively. The value of van 't Hoff factor(i) for these solutions will be in the order :

**Options** 1.  $i_A < i_B < i_C$

2.  $i_A < i_C < i_B$

3.  $i_A = i_B = i_C$

4.  $i_A > i_B > i_C$

Question Type : MCQ

Question ID : 9561771099

Option 1 ID : 9561772203

Option 2 ID : 9561772206

Option 3 ID : 9561772205

Option 4 ID : 9561772204

Status : Answered

Chosen Option : 4

**Q.79** Given below are two statements :

**Statement (I) :** Potassium hydrogen phthalate is a primary standard for standardisation of sodium hydroxide solution.

**Statement (II) :** In this titration phenolphthalein can be used as indicator.

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 correct

2.

**Statement I** is correct but **Statement II** is incorrect

3. Both **Statement I** and **Statement II** are incorrect

4.

**Statement I** is incorrect but **Statement II** is correct

Question Type : **MCQ**

Question ID : **9561771115**

Option 1 ID : **9561772267**

Option 2 ID : **9561772269**

Option 3 ID : **9561772268**

Option 4 ID : **9561772270**

Status : **Answered**

Chosen Option : **3**

**Q.80**

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

**Assertion (A) :** PH<sub>3</sub> has lower boiling point than NH<sub>3</sub>.

**Reason (R) :** In liquid state NH<sub>3</sub> molecules are associated through vander Waal's forces, but PH<sub>3</sub> molecules are associated through hydrogen bonding.

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

**Options**

1. **(A)** is correct but **(R)** is not correct

2.

Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of **(A)**

3. **(A)** is not correct but **(R)** is correct

4.

Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

Question Type : **MCQ**

Question ID : **9561771101**

Option 1 ID : **9561772213**

Option 2 ID : **9561772212**

Option 3 ID : **9561772214**

Option 4 ID : **9561772211**

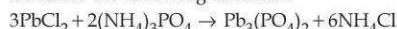
Status : **Answered**

Chosen Option : **1**

Section : Chemistry Section B

**Q.81**

Consider the following reaction :



If 72 mmol of  $\text{PbCl}_2$  is mixed with 50 mmol of  $(\text{NH}_4)_3\text{PO}_4$ , then the amount of  $\text{Pb}_3(\text{PO}_4)_2$  formed is \_\_\_\_\_ mmol (nearest integer).

Given --

Answer :

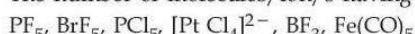
Question Type : SA

Question ID : 9561771116

Status : Not Answered

**Q.82**

The number of molecules/ion/s having trigonal bipyramidal shape is \_\_\_\_\_.



Given 3

Answer :

Question Type : SA

Question ID : 9561771117

Status : Answered

**Q.83**

$K_a$  for  $\text{CH}_3\text{COOH}$  is  $1.8 \times 10^{-5}$  and  $K_b$  for  $\text{NH}_4\text{OH}$  is  $1.8 \times 10^{-5}$ . The pH of ammonium acetate solution will be \_\_\_\_\_.

Given --

Answer :

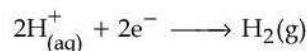
Question Type : SA

Question ID : 9561771118

Status : Not Answered

**Q.84**

The potential for the given half cell at 298 K is  $(-) \text{ } \times 10^{-2}\text{V}$ .



$$[\text{H}^+] = 1\text{M}, P_{\text{H}_2} = 2 \text{ atm}$$

(Given :  $2.303\text{RT/F} = 0.06 \text{ V}$ ,  $\log 2 = 0.3$ )

Given 9

Answer :

Question Type : SA

Question ID : 9561771120

Status : Answered

**Q.85**

The ratio of  $\frac{^{14}\text{C}}{^{12}\text{C}}$  in a piece of wood is  $\frac{1}{8}$  part that of atmosphere. If half life of  $^{14}\text{C}$  is 5730 years, the age of wood sample is \_\_\_\_\_ years.

Given 48840

Answer :

Question Type : SA

Question ID : 9561771121

Status : Answered

**Q.86**

The lowest oxidation number of an atom in a compound  $\text{A}_2\text{B}$  is  $-2$ . The number of electrons in its valence shell is \_\_\_\_\_.

Given 2

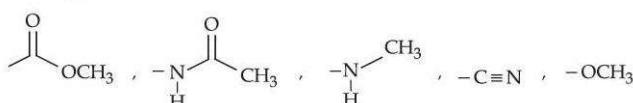
Answer :

Question Type : SA

Question ID : 9561771119

Status : Answered

**Q.87** Total number of deactivating groups in aromatic electrophilic substitution reaction among the following is \_\_\_\_\_.



Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771123**  
Status : **Not Answered**

**Q.88** Among the following oxides of p-block elements, number of oxides having amphoteric nature is \_\_\_\_\_.

Cl<sub>2</sub>O<sub>7</sub>, CO, PbO<sub>2</sub>, N<sub>2</sub>O, NO, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, N<sub>2</sub>O<sub>5</sub>, SnO<sub>2</sub>

Given 3  
Answer :

Question Type : **SA**  
Question ID : **9561771122**  
Status : **Answered**

**Q.89** The number of white coloured salts, among the following is \_\_\_\_\_.

- (a) SrSO<sub>4</sub>
- (b) Mg(NH<sub>4</sub>)PO<sub>4</sub>
- (c) BaCrO<sub>4</sub>
- (d) Mn(OH)<sub>2</sub>
- (e) PbSO<sub>4</sub>
- (f) PbCrO<sub>4</sub>
- (g) AgBr
- (h) PbI<sub>2</sub>
- (i) CaC<sub>2</sub>O<sub>4</sub>
- (j) [Fe(OH)<sub>2</sub>(CH<sub>3</sub>COO)]

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771125**  
Status : **Not Answered**

**Q.90** Number of optical isomers possible for 2-chlorobutane \_\_\_\_\_.

Given --  
Answer :

Question Type : **SA**  
Question ID : **9561771124**  
Status : **Not Answered**