National Testing Agency

Question Paper Name :	B Tech 29 Jun 2022 Shift 1
Subject Name :	B. Tech
Duration :	180
Total Marks :	300
Display Marks:	Yes

B. Tech

Group Number :	1
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300

Mathematics Section A

Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 1 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The probability that a randomly chosen 2×2 matrix with all the entries from the set of first 10 primes, is singular, is equal to :

Options :

A. $\frac{133}{10^4}$

B. $\frac{18}{10^3}$

C. $\frac{19}{10^3}$

D. $\frac{271}{10^4}$

Question Number : 2 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let the solution curve of the differential equation

$$x\frac{dy}{dx} - y = \sqrt{y^2 + 16x^2}$$

,

$$y(1) = 3$$

be

$$y = y(x)$$

. Then y(2) is equal to:

Options :

A. 15

B. 11

C. 13

D. 17

Question Number : 3 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let $f : R \to R$ be a function defined by :

$$f(x) = \begin{cases} \max\{t^3 - 3t\}\, t \le x & ; \quad x \le 2 \\ x^2 + 2x - 6 & ; \quad 2 < x < 3 \\ [x - 3] + 9 & ; \quad 3 \le x \le 5 \\ 2x + 1 & ; \quad x > 5 \end{cases}$$

where [t] is the greatest integer less than or equal to t. Let m be the number of points where f is not differentiable and

$$I = \int_{-2}^{2} f(x)\, dx$$

. Then the ordered pair (m, I) is equal to :

Options :

A. $\left(3, \frac{27}{4}\right)$

B. $\left(3, \frac{23}{4}\right)$

C. $\left(4, \frac{27}{4}\right)$

D. $\left(4, \frac{23}{4}\right)$

Question Number : 4 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let

$$\vec{a} = \alpha\hat{i} + 3\hat{j} - \hat{k}$$

,

$$\vec{b} = 3\hat{i} - \beta\hat{j} + 4\hat{k}$$

and

$$\vec{c} = \hat{i} + 2\hat{j} - 2\hat{k}$$

where $\alpha, \beta \in R$, be three vectors. If the projection of $\vec{a}$ on $\vec{c}$ is $\frac{10}{3}$ and

$$\vec{b} \times \vec{c} = -6\hat{i} + 10\hat{j} + 7\hat{k}$$

, then the value of $\alpha + \beta$ is equal to :

Options :

A. 3

B. 4

C. 5

D. 6

Question Number : 5 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The area enclosed by $y^2 = 8x$ and $y = \sqrt{2}\ x$ that lies outside the triangle formed by $y = \sqrt{2}\ x$, $x = 1$, $y = 2\sqrt{2}$, is equal to:

Options :

A. $\frac{16\sqrt{2}}{6}$

B. $\frac{11\sqrt{2}}{6}$

C. $\frac{13\sqrt{2}}{6}$

D. $\frac{5\sqrt{2}}{6}$

Question Number : 6 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the system of linear equations

$2x + y - z = 7$

$x - 3y + 2z = 1$

$x + 4y + \delta z = k$, where $\delta, k \in R$ has infinitely many solutions, then $\delta + k$ is equal to:

Options :

A. -3

B. 3

C. 6

D. 9

Question Number : 7 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let α and β be the roots of the equation $x^2 + (2i - 1) = 0$. Then, the value of $|\alpha^8 + \beta^8|$ is equal to :

Options :

A. 50

B. 250

C. 1250

D. 1500

Question Number : 8 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let

$$A = [a_{ij}]$$

be a square matrix of order 3 such that $a_{ij} = 2^{j-i}$, for all i, j = 1, 2, 3. Then, the matrix $A^2 + A^3 + ... + A^{10}$ is equal to :

Options :

A. $\left(\frac{3^{10} - 3}{2}\right)A$

B. $\left(\frac{3^{10} - 1}{2}\right)A$

C. $\left(\frac{3^{10}+1}{2}\right)A$

D. $\left(\frac{3^{10}+3}{2}\right)A$

Question Number : 9 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let a set $A = A_1 \cup A_2 \cup ..... \cup A_k$, where $A_i \cap A_j = \phi$ for $i \neq j$, $1 \leq j, j \leq k$. Define the relation R from A to A by $R = \{(x, y) : y \in A_i$ if and only if $x \in A_i, 1 \leq i \leq k\}$. Then, R is :

Options :

A. reflexive, symmetric but not transitive.

B. reflexive, transitive but not symmetric.

C. reflexive but not symmetric and transitive.

D. an equivalence relation.

Question Number : 10 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The distance between the two points A and A' which lie on $y = 2$ such that both the line segments AB and A' B (where B is the point (2, 3)) subtend angle $\frac{\pi}{4}$ at the origin, is equal to :

Options :

A. 10

B. $\frac{48}{5}$

C. $\frac{52}{5}$

D. 3

Question Number : 11 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A wire of length 22 m is to be cut into two pieces. One of the pieces is to be made into a square and the other into an equilateral triangle. Then, the length of the side of the equilateral triangle, so that the combined area of the square and the equilateral triangle is minimum, is :

Options :

A. $\frac{22}{9+4\sqrt{3}}$

B. $\frac{66}{9+4\sqrt{3}}$

C. $\frac{22}{4+9\sqrt{3}}$

D. $\frac{66}{4+9\sqrt{3}}$

Question Number : 12 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The domain of the function

$$\cos^{-1}\left(\frac{2\sin^{-1}\left(\frac{1}{4x^2-1}\right)}{\pi}\right)$$

is :

Options :

A. $R-\left\{-\frac{1}{2},\frac{1}{2}\right\}$

B. $(-\infty,-1]\cup[1,\infty)\cup\{0\}$

C. $\left(-\infty,\frac{-1}{2}\right)\cup\left(\frac{1}{2},\infty\right)\cup\{0\}$

D. $\left(-\infty,\frac{-1}{\sqrt{2}}\right]\cup\left[\frac{1}{\sqrt{2}},\infty\right)\cup\{0\}$

Question Number : 13 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the constant term in the expansion of

$$\left(3x^3-2x^2+\frac{5}{x^5}\right)^{10}$$

is $2^k.l$, where l is an odd integer, then the value of k is equal to:

Options :

A. 6

B. 7

C. 8

D. 9

Question Number : 14 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

$$\int_0^5 \cos\left(\pi\left(x-\left[\frac{x}{2}\right]\right)\right)dx$$

,

where [t] denotes greatest integer less than or equal to t, is equal to:

Options :

A. -3

B. -2

C. 2

D. 0

Question Number : 15 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let PQ be a focal chord of the parabola $y^2 = 4x$ such that it subtends an angle of $\frac{\pi}{2}$ at the point (3, 0). Let the line segment PQ be also a focal chord of the ellipse

$$E: \frac{x^2}{a^2}+\frac{y^2}{b^2}=1$$

, $a^2 > b^2$. If e is the eccentricity of the ellipse E, then the value of $\frac{1}{e^2}$ is equal to :

Options :

A. $1+\sqrt{2}$

B. $3+2\sqrt{2}$

C. $1+2\sqrt{3}$

D. $4+5\sqrt{3}$

Question Number : 16 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let the mean and the variance of 5 observations x_1, x_2, x_3, x_4, x_5 be $\frac{24}{5}$ and $\frac{194}{25}$ respectively. If the mean and variance of the first 4 observation are $\frac{7}{2}$ and a respectively, then $(4a + x_5)$ is equal to:

Options :

A. 13

B. 15

C. 17

D. 18

Question Number : 17 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If the mirror image of the point (2, 4, 7) in the plane $3x - y + 4z = 2$ is (a, b, c), then $2a + b + 2c$ is equal to :

Options :

A. 54

B. 50

C. -6

D. -42

Question Number : 18 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let $\Delta \in \{\wedge, \vee, \Rightarrow, \Leftrightarrow\}$ be such that $(p \wedge q)\ \Delta\ ((p \vee q) \Rightarrow q)$ is a tautology. Then Δ is equal to :

Options :

A. $\wedge$

B. $\vee$

C. $\Rightarrow$

D. $\Leftrightarrow$

Question Number : 19 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let

$$\{a_n\}_{n=0}^{\infty}$$

be a sequence such that $a_0 = a_1 = 0$ and

$$a_{n+2} = 2a_{n+1} - a_n + 1$$

for all n $\geq$ 0. Then,

$$\sum_{n=2}^{\infty} \frac{a_n}{7^n}$$

is equal to:

Options :

A. $\frac{6}{343}$

B. $\frac{7}{216}$

C. $\frac{8}{343}$

D. $\frac{49}{216}$

Question Number : 20 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let the tangent to the circle $C_1 : x^2 + y^2 = 2$ at the point M$(-1, 1)$ intersect the circle $C_2 : (x-3)^2 + (y-2)^2 = 5$, at two distinct points A and B. If the tangents to C_2 at the points A and B intersect at N, then the area of the triangle ANB is equal to :

Options :

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

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

C. $\frac{1}{6}$

D. $\frac{5}{3}$

Mathematics Section B

Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 21 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let

$$S = \{z \in C : |z - 2| \leq 1,\ z(1+i) + z(1-i) \leq 2\}$$

. Let $|z - 4i|$ attains minimum and maximum values, respectively, at $z_1 \in S$ and $z_2 \in S$. If

$$5(|z_1|^2 + |z_2|^2) = \alpha + \beta\sqrt{5}$$

, where α and β are integers, then the value of $\alpha + \beta$ is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 22 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let y = y(x) be the solution of the differential equation

$$\frac{dy}{dx} + \frac{\sqrt{2}\ y}{2\cos^4 x - \cos^2 x} = xe^{\tan^{-1}(\sqrt{2}\ \cot 2x)},\ 0 < x < \frac{\pi}{2}$$

with

$$y\left(\frac{\pi}{4}\right) = \frac{\pi^2}{32}$$

. If

$$y\left(\frac{\pi}{3}\right) = \frac{\pi^2}{18}e^{-\tan^{-1}(\alpha)}$$

, then the value of $3\alpha^2$ is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 23 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

$$50\tan\left(3\tan^{-1}\left(\frac{1}{2}\right) + 2\cos^{-1}\left(\frac{1}{\sqrt{5}}\right)\right) + 4\sqrt{2}\ \tan\left(\frac{1}{2}\tan^{-1}(2\sqrt{2}\ )\right)$$

is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 24 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let c, k ∈ R. If

$$f(x) = (c+1)x^2 + (1-c^2)x + 2k$$

and

$$f(x+y) = f(x) + f(y) - xy$$

, for all x, y ∈ R, then the value of $|2(f(1) + f(2) + f(3) + \ ..... \ + \ f(20))|$ is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 25 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let

$$H: \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

, a > 0, b > 0, be a hyperbola such that the sum of lengths of the transverse and the conjugate axes is $4(2\sqrt{2} + \sqrt{14})$. If the eccentricity H is

$$\frac{\sqrt{11}}{2}$$

, then the value of $a^2 + b^2$ is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 26 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let $b_1b_2b_3b_4$ be a 4-element permutation with $b_i \in \{1, 2, 3, ..., 100\}$ for $1 \leq i \leq 4$ and $b_i \neq b_j$ for $i \neq j$, such that either b_1, b_2, b_3 are consecutive integers or b_2, b_3, b_4 are consecutive integers. Then the number of such permutations $b_1b_2b_3b_4$ is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 27 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let d be the distance between the foot of perpendiculars of the points P(1, 2, −1) and Q(2, −1, 3) on the plane $-x + y + z = 1$. Then d^2 is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 28 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The number of elements in the set

$$S = \{\theta \in [-4\pi, 4\pi] : 3\cos^2 2\theta + 6\cos 2\theta - 10\cos^2\theta + 5 = 0\}$$

is _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 29 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The number of solutions of the equation

$$2\theta - \cos^2\theta + \sqrt{2} = 0$$

in R is equal to _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 30 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let

$$P_1 : \vec{r} \cdot \left(2\hat{i} + \hat{j} - 3\hat{k}\right) = 4$$

be a plane. Let P_2 be another plane which passes through the points (2, −3, 2), (2, −2, −3) and (1, −4, 2). If the direction ratios of the line of intersection of P_1 and P_2 be 16, α, β, then the value of $\alpha + \beta$ is equal to

_____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Physics Section A

Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two balls A and B are placed at the top of 180 m tall tower. Ball A is released from the top at t = 0 s. Ball B is thrown vertically down with an initial velocity 'u' at t = 2 s. After a certain time, both balls meet 100 m above the ground. Find the value of 'u' in ms^{-1}. [use g = 10 ms^{-2}] :

Options :

A. 10

B. 15

C. 20

D. 30

Question Number : 32 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A body of mass M at rest explodes into three pieces, in the ratio of masses 1 : 1 : 2. Two smaller pieces fly off perpendicular to each other with velocities of 30 ms^{-1} and 40 ms^{-1} respectively. The velocity of the third piece will be :

Options :

A. 15 ms^{-1}

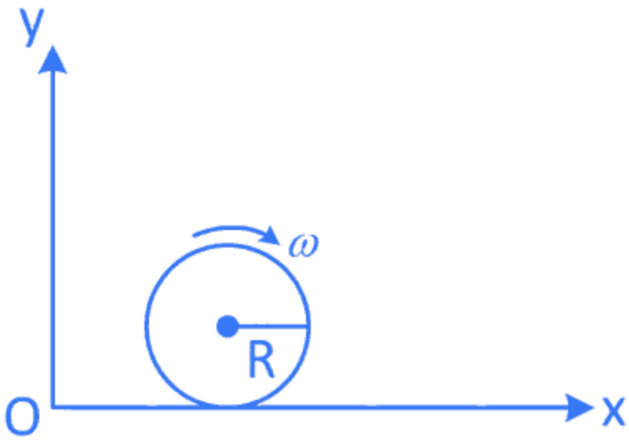
B. 25 ms^{-1}

C. 35 ms^{-1}

D. 50 ms^{-1}

Question Number : 33 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A spherical shell of 1 kg mass and radius R is rolling with angular speed ω on horizontal plane (as shown in figure). The magnitude of angular momentum of the shell about the origin O is $\frac{a}{3}R^2\omega$. The value of a will be :



Options :

A. 2

B. 3

C. 5

D. 4

Question Number : 34 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A cylinder of fixed capacity of 44.8 litres contains helium gas at standard temperature and pressure. The amount of heat needed to raise the temperature of gas in the cylinder by 20.0°C will be :

(Given gas constant R = 8.3 JK^{-1}-mol^{-1})

Options :

A. 249 J

B. 415 J

C. 498 J

D. 830 J

Question Number : 35 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A wire of length L is hanging from a fixed support. The length changes to L_1 and L_2 when masses 1 kg and 2 kg are suspended respectively from its free end. Then the value of L is equal to :

Options :

A. $\sqrt{L_1 L_2}$

B. $\frac{L_1 + L_2}{2}$

C. $2L_1 - L_2$

D. $3L_1 - 2L_2$

Question Number : 36 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Assertion A : The photoelectric effect does not takes place, if the energy of the incident radiation is less than the work function of a metal.

Reason R : Kinetic energy of the photoelectrons is zero, if the energy of the incident radiation is equal to the work function of a metal.

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

Options :

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct but R is not correct.

D. A is not correct but R is correct.

Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A particle of mass 500 gm is moving in a straight line with velocity $v = b\, x^{5/2}$. The work done by the net force during its displacement from x = 0 to x = 4 m is : (Take $b = 0.25\ m^{-3/2}\ s^{-1}$).

Options :

A. 2 J

B. 4 J

C. 8 J

D. 16 J

Question Number : 38 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A charge particle moves along circular path in a uniform magnetic field in a cyclotron. The kinetic energy of the charge particle increases to 4 times its initial value. What will be the ratio of new radius to the original radius of circular path of the charge particle :

Options :

A. 1 : 1

B. 1 : 2

C. 2 : 1

D. 1 : 4

Question Number : 39 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

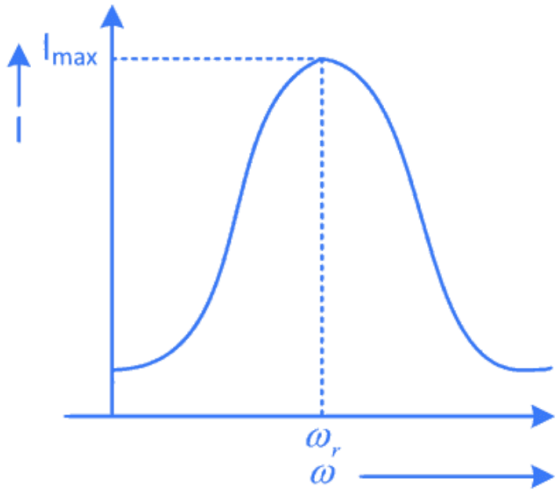
For a series LCR circuit, I vs ω curve is shown :

(a) To the left of ω_r, the circuit is mainly capacitive.

(b) To the left of ω_r, the circuit is mainly inductive.

(c) At ω_r, impedance of the circuit is equal to the resistance of the circuit.

(d) At ω_r, impedance of the circuit is 0.



Choose the most appropriate answer from the options given below :

Options :

A. (a) and (d) only.

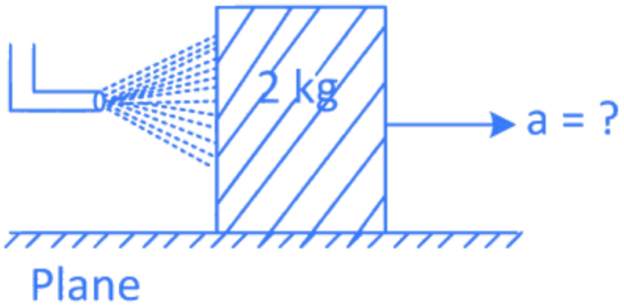
B. (b) and (d) only.

C. (a) and (c) only.

D. (b) and (c) only.

Question Number : 40 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A block of metal weighing 2 kg is resting on a frictionless plane (as shown in figure). It is struck by a jet releasing water at a rate of 1 kgs^{-1} and at a speed of 10 ms^{-1}. Then, the initial acceleration of the block, in ms^{-2}, will be :



Options :

A. 3

B. 6

C. 5

D. 4

Question Number : 41 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In van der Waal equation

$$\left[P + \frac{a}{V^2}\right]$$

[V − b] = RT; P is pressure, V is volume, R is universal gas constant and T is temperature. The ratio of constants

$$\frac{a}{b}$$

is dimensionally equal to :

Options :

A. $\frac{P}{V}$

B. $\frac{V}{P}$

C. PV

D. PV^3

Question Number : 42 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two vectors $\vec{A}$ and $\vec{B}$ have equal magnitudes. If magnitude of $\vec{A} + \vec{B}$ is equal to two times the magnitude of $\vec{A} - \vec{B}$, then the angle between $\vec{A}$ and $\vec{B}$ will be :

Options :

A. $\sin^{-1}\left(\frac{3}{5}\right)$

B. $\sin^{-1}\left(\frac{1}{3}\right)$

C. $\cos^{-1}\left(\frac{3}{5}\right)$

D. $\cos^{-1}\left(\frac{1}{3}\right)$

Question Number : 43 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The escape velocity of a body on a planet 'A' is 12 kms^{-1}. The escape velocity of the body on another planet 'B', whose density is four times and radius is half of the planet 'A', is :

Options :

A. $12\ kms^{-1}$

B. $24\ kms^{-1}$

C. $36\ kms^{-1}$

D. $6\ kms^{-1}$

Question Number : 44 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A longitudinal wave is represented by

$$x = 10 \sin 2\pi\left(nt - \frac{x}{\lambda}\right)$$

cm. The maximum particle velocity will be four times the wave velocity if the determined value of wavelength is equal to :

Options :

A. 2π

B. 5π

C. π

D. $\frac{5\pi}{2}$

Question Number : 45 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A parallel plate capacitor filled with a medium of dielectric constant 10, is connected across a battery and is charged. The dielectric slab is replaced by another slab of dielectric constant 15. Then the energy of capacitor will :

Options :

A. increase by 50%

B. decrease by 15%

C. increase by 25%

D. increase by 33%

Question Number : 46 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A positive charge particle of 100 mg is thrown in opposite direction to a uniform electric field of strength 1×10^5 NC^{-1}. If the charge on the particle is 40 μC and the initial velocity is 200 ms^{-1}, how much distance it will travel before coming to the rest momentarily :

Options :

A. 1 m

B. 5 m

C. 10 m

D. 0.5 m

Question Number : 47 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Using Young's double slit experiment, a monochromatic light of wavelength 5000 $\mathring{A}$ produces fringes of fringe width 0.5 mm. If another monochromatic light of wavelength 6000 $\mathring{A}$ is used and the separation between the slits is doubled, then the new fringe width will be :

Options :

A. 0.5 mm

B. 1.0 mm

C. 0.6 mm

D. 0.3 mm

Question Number : 48 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The activity of a radioactive material is 2.56×10^{-3} Ci. If the half life of the material is 5 days, after how many days the activity will become 2×10^{-5} Ci ?

Options :

A. 30 days

B. 35 days

C. 40 days

D. 25 days

Question Number : 49 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

At a certain place the angle of dip is 30° and the horizontal component of earth's magnetic field is 0.5 G. The earth's total magnetic field (in G), at that certain place, is :

Options :

A. $\frac{1}{\sqrt{3}}$

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

C. $\sqrt{3}$

D. 1

Question Number : 50 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Only 2% of the optical source frequency is the available channel bandwidth for an optical communicating system operating at 1000 nm. If an audio signal requires a bandwidth of 8 kHz, how many channels can be accommodated for transmission :

Options :

A. 375×10^7

B. 75×10^7

C. 375×10^8

D. 75×10^9

Physics Section B

Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 51 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Two coils require 20 minutes and 60 minutes respectively to produce same amount of heat energy when connected separately to the same source. If they are connected in parallel arrangement to the same source; the time required to produce same amount of heat by the combination of coils, will be _____ min.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 52 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The intensity of the light from a bulb incident on a surface is 0.22 W/m^2. The amplitude of the magnetic field in this light-wave is _____ $\times 10^{-9}$ T.

(Given : Permittivity of vacuum $\in_0 = 8.85 \times 10^{-12}$ C^2 N^{-1}-m^{-2}, speed of light in vacuum c = 3×10^8 ms^{-1})

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 53 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

As per the given figure, two plates A and B of thermal conductivity K and 2 K are joined together to form a compound plate. The thickness of plates are 4.0 cm and 2.5 cm respectively and the area of cross-section is 120 cm^2 for each plate. The equivalent thermal conductivity of the compound plate is

$$\left(1+\frac{5}{\alpha}\right)$$

K, then the value of α will be _____.



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

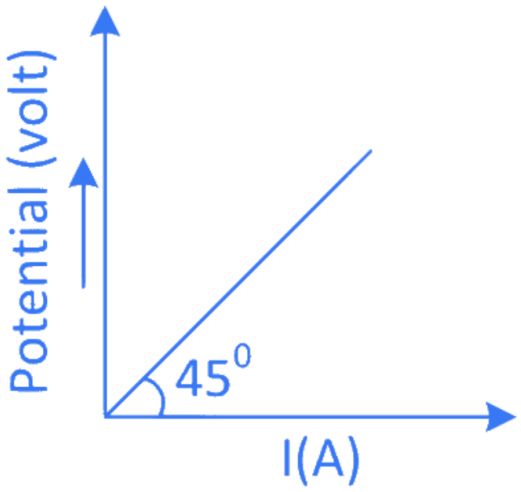
Question Number : 54 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

A body is performing simple harmonic with an amplitude of 10 cm. The velocity of the body was tripled by air jet when it is at 5 cm from its mean position. The new amplitude of vibration is $\sqrt{x}$ cm. The value of x is _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 55 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The variation of applied potential and current flowing through a given wire is shown in figure. The length of wire is 31.4 cm. The diameter of wire is measured as 2.4 cm. The resistivity of the given wire is measured as $x \times 10^{-3}$ Ω cm. The value of x is _____. [Take $\pi = 3.14$]



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 56 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

$\sqrt{d_1}$ and $\sqrt{d_2}$ are the impact parameters corresponding to scattering angles 60° and 90° respectively, when an α particle is approaching a gold nucleus. For $d_1 = x\ d_2$, the value of x will be _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

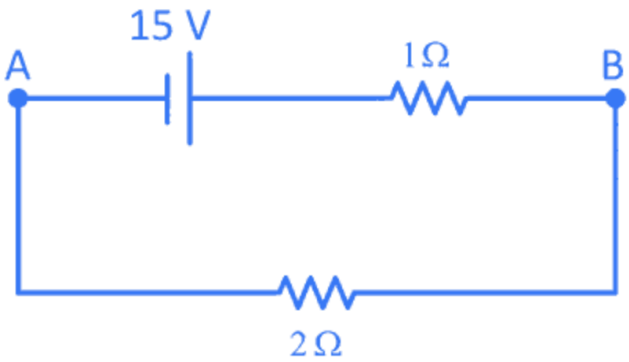
Question Number : 57 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

A parallel beam of light is allowed to fall on a transparent spherical globe of diameter 30 cm and refractive index 1.5. The distance from the centre of the globe at which the beam of light can converge is _____ mm.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 58 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

For the network shown below, the value of $V_B - V_A$ is _____ V.



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 59 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

300 cal. of heat is given to a heat engine and it rejects 225 cal. If source temperature is 227°C, then the temperature of sink will be _____ °C.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 60 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

A transistor is used in an amplifier circuit in common emitter mode. If the base current changes by 100 μA, it brings a change of 10 mA in collector current. If the load resistance is 2 kΩ and input resistance is 1 kΩ, the value of power gain is $x \times 10^4$. The value of x is _____.

Response Type : Numeric
Evaluation Required For SA : Yes

Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Chemistry Section A

Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 61 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Production of iron in blast furnace follows the following equation

$Fe_3O_4(s) + 4CO(g) \rightarrow 3Fe(l) + 4CO_2(g)$

when 4.640 kg of Fe_3O_4 and 2.520 kg of CO are allowed to react then the amount of iron (in g) produced is :

[Given : Molar Atomic mass (g mol^{-1}) : Fe = 56, Molar Atomic mass (g mol^{-1}) : O = 16, Molar Atomic mass (g mol^{-1}) : C = 12]

Options :

A. 1400

B. 2200

C. 3360

D. 4200

Question Number : 62 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following statements are correct?

(A) The electronic configuration of Cr is [Ar] $3d^5$ $4s^1$.

(B) The magnetic quantum number may have a negative value.

(C) In the ground state of an atom, the orbitals are filled in order of their increasing energies.

(D) The total number of nodes are given by n – 2.

Choose the most appropriate answer from the options given below :

Options :

A. (A), (C) and (D) only

B. (A) and (B) only

C. (A) and (C) only

D. (A), (B) and (C) only

Question Number : 63 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The solubility of AgCl will be maximum in which of the following?

Options :

A. 0.01 M KCl

B. 0.01 M HCl

C. 0.01 M $AgNO_3$

D. Deionised water

Question Number : 64 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The electronic configuration of Pt (atomic number 78) is :

Options :

A. $[Xe]\ 4f^{14}\ 5d^{9}\ 6s^{1}$

B. $[Kr]\ 4f^{14}\ 5d^{10}$

C. $[Xe]\ 4f^{14}\ 5d^{10}$

D. $[Xe]\ 4f^{14}\ 5d^{8}\ 6s^{2}$

Question Number : 65 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Two isomers 'A' and 'B' with molecular formula C_4H_8 give different products on oxidation with $KMnO_4$ in acidic medium. Isomer 'A' on reaction with $KMnO_4/H^+$ results in effervescence of a gas and gives ketone. The compound 'A' is

Options :

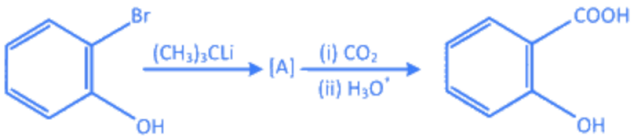
A. But-1-ene.

B. cis-But-2-ene.

C. trans-But-2-ene.

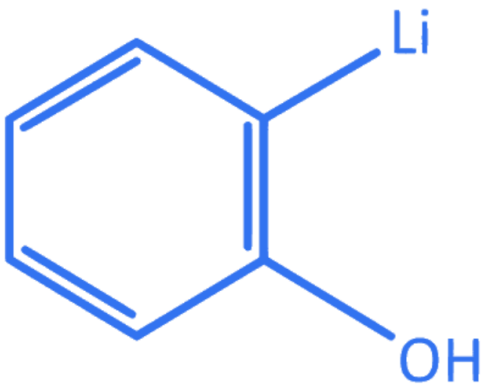
D. 2-methyl propene.

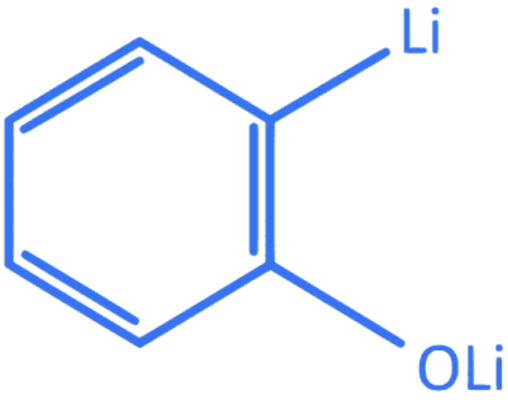
Question Number : 66 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

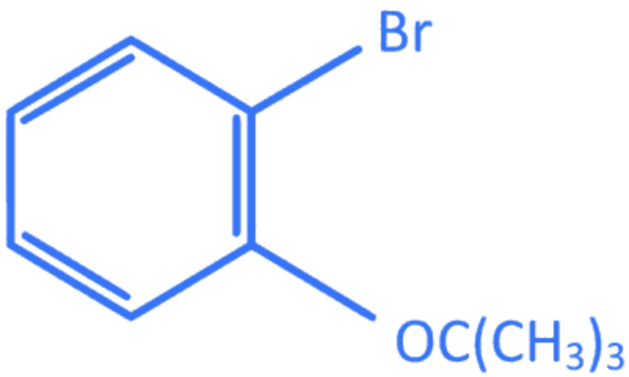


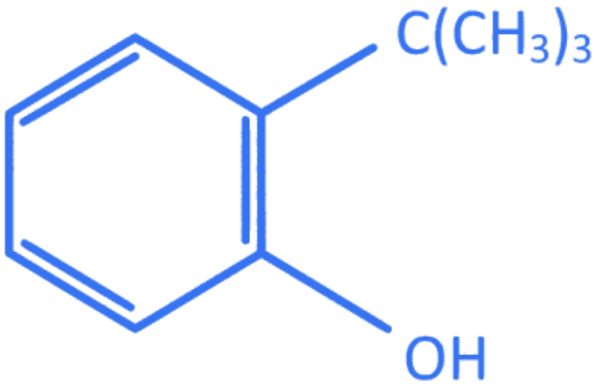
In the given conversion the compound A is :

Options :

A. 

B. 

C. 

D. 

Question Number : 67 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements :

Statement I : The esterification of carboxylic acid with an alcohol is a nucleophilic acyl substitution.

Statement II : Electron withdrawing groups in the carboxylic acid will increase the rate of esterification reaction.

Choose the most appropriate option :

Options :

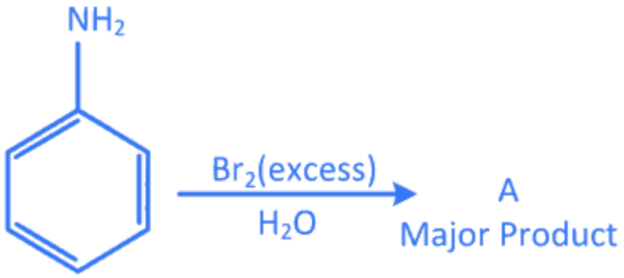
A. Both Statement I and Statement II are correct.

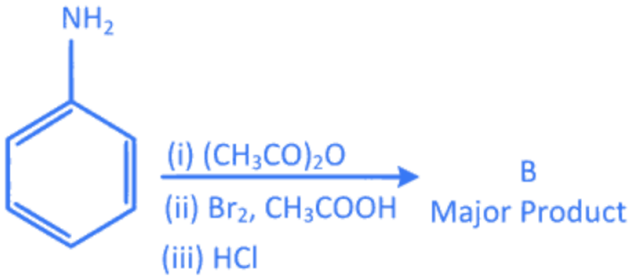
B. Both Statement I and Statement II are incorrect.

C. Statement I is correct but Statement II is incorrect.

D. Statement I is incorrect but Statement II is correct.

Question Number : 68 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

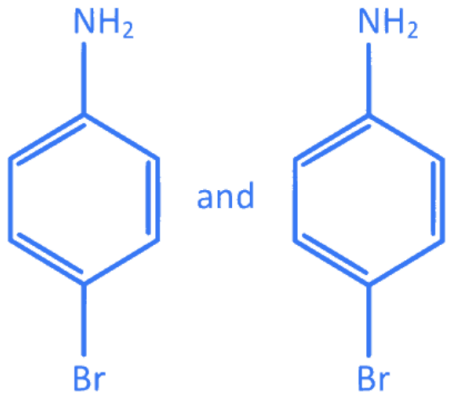




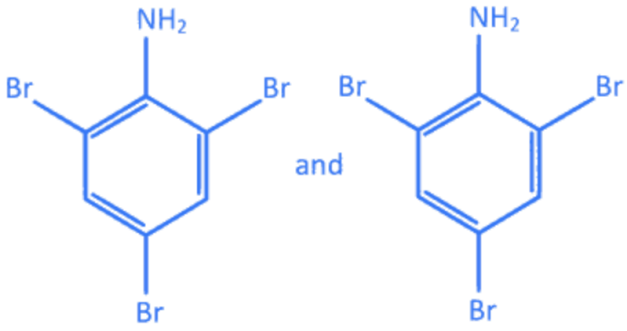
Consider the above reactions, the product A and product B respectively are

Options :

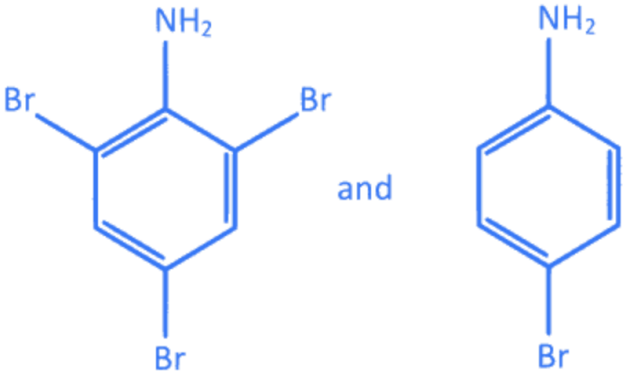
A.

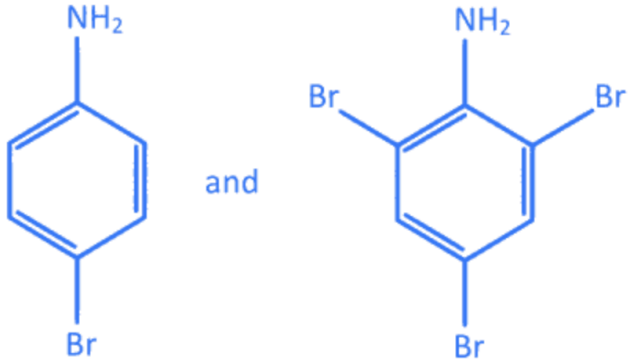


B.



C.



D. 

Question Number : 69 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Sugar moiety in DNA and RNA molecules respectively are

Options :

A. β-D-2-deoxyribose, β-D-deoxyribose.

B. β-D-2-deoxyribose, β-D-ribose

C. β-D-ribose, β-D-2-deoxyribose.

D. β-D-deoxyribose, β-D-2-deoxyribose.

Question Number : 70 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements :

Statement I : Phenols are weakly acidic.

Statement II : Therefore they are freely soluble in NaOH solution and are weaker acids than alcohols and water.

Choose the most appropriate option :

Options :

A. Both Statement I and Statement II are correct.

B. Both Statement I and Statement II are incorrect.

C. Statement I is correct but Statement II is incorrect.

D. Statement I is incorrect but Statement II is correct.

Question Number : 71 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following in the decreasing order of their covalent character :

(A) LiCl

(B) NaCl

(C) KCl

(D) CsCl

Choose the most appropriate answer from the options given below :

Options :

A. (A) > (C) > (B) > (D)

B. (B) > (A) > (C) > (D)

C. (A) > (B) > (C) > (D)

D. (A) > (B) > (D) > (C)

Question Number : 72 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is a correct statement?

Options :

A. Brownian motion destabilises sols.

B. Any amount of dispersed phase can added to emulsion without destablising it.

C. Mixing two oppositely charged sols in equal amount neutralises charges and stabilises colloids.

D. Presence of equal and similar charges on colloidal particles provides stability to the colloidal solution.

Question Number : 73 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In isolation of which one of the following metals from their ores, the use of cyanide salt is not commonly involved?

Options :

A. Zinc

B. Gold

C. Silver

D. Copper

Question Number : 74 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which one of the following reactions indicates the reducing ability of hydrogen peroxide in basic medium?

Options :

A. $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

B. $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

C. $2MnO_4^- + 3H_2O_2 \rightarrow 2MnO_2 + 3O_2 + 2H_2O + 2OH^-$

D. $Mn^{2+} + H_2O_2 \rightarrow Mn^{4+} + 2OH^-$

Question Number : 75 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match List-I with List-II

	List-I (Metal)		**List-II (Emitted light wavelength (nm))**
(A)	Li	(I)	670.8
(B)	Na	(II)	589.2
(C)	Rb	(III)	780.0
(D)	Cs	(IV)	455.5

Choose the most appropriate answer from the options given below :

Options :

A. (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

B. (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

C. (A)-(III), (B)-(I), (C)-(II), (D)-(IV)

D. (A)-(IV), (B)-(II), (C)-(I), (D)-(III)

Question Number : 76 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match List-I with List-II.

	List-I (Metal)		**List-II (Application)**
(A)	Cs	(I)	High temperature thermometer
(B)	Ga	(II)	Water repellent sprays
(C)	B	(III)	Photoelectric cells
(D)	Si	(IV)	Bullet proof vest

Choose the most appropriate answer from the options given below :

Options :

A. (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

B. (A)-(IV), (B)-(III), (C)-(II), (D)-(I)

C. (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

D. (A)-(I), (B)-(IV), (C)-(II), (D)-(III)

Question Number : 77 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The oxoacid of phosphorus that is easily obtained from a reaction of alkali and white phosphorus and has two P-H bonds, is :

Options :

A. Phosphonic acid

B. Phosphinic acid

C. Pyrophosphorus acid

D. Hypophosphoric acid

Question Number : 78 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The acid that is believed to be mainly responsible for the damage of Taj Mahal is :

Options :

A. sulfuric acid.

B. hydrofluoric acid.

C. phosphoric acid.

D. hydrochloric acid.

Question Number : 79 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The polymer, which can be stretched and remains its original status on releasing the force is

Options :

A. Bakelite.

B. Nylon 6, 6.

C. Buna-N.

D. Terylene.

Question Number : 80 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following compound does not contain sulphur atom?

Options :

A. Cimetidine

B. Ranitidine

C. Histamine

D. Saccharin

Chemistry Section B

Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Maximum Instruction Time :	0
Sub-Section Number :	1
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 81 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

17.0 g of NH_3 completely vapourises at $-33.42°C$ and 1 bar pressure and the enthalpy change in the process is 23.4 kJ mol^{-1}. The enthalpy change for the vapourisation of 85 g of NH_3 under the same conditions is _____ kJ.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 82 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

1.2 mL of acetic acid is dissolved in water to make 2.0 L of solution. The depression in freezing point observed for this strength of acid is 0.0198°C. The percentage of dissociation of the acid is _____. (Nearest integer)

[Given : Density of acetic acid is 1.02 g mL^{-1}, Molar mass of acetic acid is 60 g mol^{-1}, $K_f(H_2O)$ = 1.85 K kg mol^{-1}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 83 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

A dilute solution of sulphuric acid is electrolysed using a current of 0.10 A for 2 hours to produce hydrogen and oxygen gas. The total volume of gases produced a STP is _____ cm^3. (Nearest integer)

[Given : Faraday constant F = 96500 C mol^{-1} at STP, molar volume of an ideal gas is 22.7 L mol^{-1}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 84 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The activation energy of one of the reactions in a biochemical process is 532611 J mol^{-1}. When the temperature falls from 310 K to 300 K, the change in rate constant observed is $k_{300} = x \times 10^{-3}\ k_{310}$. The value of x is _____.

[Given :

$$\ln 10 = 2.3$$

, R = 8.3 J K^{-1} mol^{-1}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 85 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The number of terminal oxygen atoms present in the product B obtained from the following reaction is _____.

$$FeCr_2O_4 + Na_2CO_3 + O_2 \rightarrow A + Fe_2O_3 + CO_2$$

$$A + H^+ \rightarrow B + H_2O + Na^+$$

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 86 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

An acidified manganate solution undergoes disproportionation reaction. The spin-only magnetic moment value of the product having manganese in higher oxidation state is _____ B.M. (Nearest integer)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

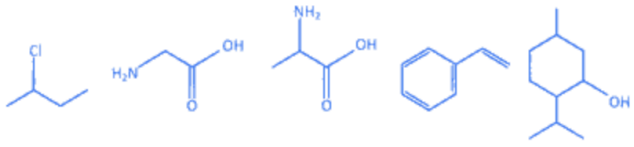
Question Number : 87 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Kjeldahl's method was used for the estimation of nitrogen in an organic compound. The ammonia evolved from 0.55 g of the compound neutralised 12.5 mL of 1 M H_2SO_4 solution. The percentage of nitrogen in the compound is _____. (Nearest integer)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 88 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Observe structures of the following compounds



The total number of structures/compounds which possess asymmetric carbon atoms is _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 89 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

$C_6H_{12}O_6 \xrightarrow{\text{Zymase}}$

$A \xrightarrow[\Delta]{\text{NaOI}} B + CHI_3$

The number of carbon atoms present in the product B is _____.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText

Question Number : 90 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Geraniol, a volatile organic compound, is a component of rose oil. The density of the vapour is 0.46 gL^{-1} at 257°C and 100 mm Hg. The molar mass of geraniol is _____ g mol^{-1}. (Nearest Integer)

[Given : R = 0.082 L atm K^{-1} mol^{-1}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText