National Testing Agency

Question Paper Name :	B Tech 12 Apr 2023 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

Two dice A and B are rolled. Let the numbers obtained on A and B be α and β respectively. If the variance of $\alpha - \beta$ is $\frac{p}{q}$, where p and q are co-prime, then the sum of the positive divisors of p is equal to :

Options :

A. 48

B. 31

C. 72

D. 36

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

$$A = \begin{bmatrix} 1 & \frac{1}{51} \\ 0 & 1 \end{bmatrix}$$

. If

$$\mathrm{B} = \begin{bmatrix} 1 & 2 \\ -1 & -1 \end{bmatrix} A \begin{bmatrix} -1 & -2 \\ 1 & 1 \end{bmatrix}$$

, then the sum of all the elements of the matrix

$$\sum_{n=1}^{50} B^n$$

is equal to

Options :

A. 50

B. 75

C. 100

D. 125

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

$$y = y(x), y > 0$$

, be a solution curve of the differential equation

$$\left(1 + x^2\right)\mathrm{d}y = y(x - y)\mathrm{d}x$$

. If

$$y(0) = 1$$

and

$$y(2\sqrt{2}\,) = \beta$$

, then

Options :

A. $e^{\beta^{-1}} = e^{-2}(3 + 2\sqrt{2}\,)$

B. $e^{3\beta^{-1}} = e(5 + \sqrt{2}\,)$

C. $e^{3\beta^{-1}} = e(3 + 2\sqrt{2}\,)$

D. $e^{\beta^{-1}} = e^{-2}(5 + \sqrt{2}\,)$

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 the lines

$$l_1 : \frac{x+5}{3} = \frac{y+4}{1} = \frac{z-\alpha}{-2}$$

and

$$l_2 : 3x + 2y + z - 2 = 0 = x - 3y + 2z - 13$$

be coplanar. If the point $P(a, b, c)$ on l_1 is nearest to the point $Q(-4, -3, 2)$, then $|a| + |b| + |c|$ is equal to

Options :

A. 12

B. 14

C. 10

D. 8

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 number of five digit numbers, greater than 40000 and divisible by 5 , which can be formed using the digits 0,1,3,5,7 and 9 without repetition, is equal to :

Options :

A. 132

B. 72

C. 120

D. 96

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

Let C be the circle in the complex plane with centre

$$z_0 = \frac{1}{2}(1 + 3i)$$

and radius $r = 1$. Let

$$z_1 = 1 + i$$

and the complex number z_2 be outside the circle C such that

$$|z_1 - z_0||z_2 - z_0| = 1$$

. If z_0, z_1 and z_2 are collinear, then the smaller value of $|z_2|^2$ is equal to :

Options :

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

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

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

D. $\frac{7}{2}$

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

If the point

$$\left(\alpha, \frac{7\sqrt{3}}{3}\right)$$

lies on the curve traced by the mid-points of the line segments of the lines

$$x\cos\theta + y\sin\theta = 7, \theta \in \left(0, \frac{\pi}{2}\right)$$

between the co-ordinates axes, then α is equal to :

Options :

A. -7

B. 7

C. $-7\sqrt{3}$

D. $7\sqrt{3}$

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 α, β be the roots of the quadratic equation

$$x^2 + \sqrt{6}\ x + 3 = 0$$

. Then

$$\frac{\alpha^{23} + \beta^{23} + \alpha^{14} + \beta^{14}}{\alpha^{15} + \beta^{15} + \alpha^{10} + \beta^{10}}$$

is equal to :

Options :

A. 72

B. 9

C. 729

D. 81

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

$$\mathrm{P}\left(\frac{2\sqrt{3}}{\sqrt{7}}, \frac{6}{\sqrt{7}}\right), \mathrm{Q}, \mathrm{R}$$

and S be four points on the ellipse $9x^2 + 4y^2 = 36$. Let PQ and RS be mutually perpendicular and pass through the origin. If

$$\frac{1}{(PQ)^2} + \frac{1}{(RS)^2} = \frac{p}{q}$$

, where p and q are coprime, then $p + q$ is equal to :

Options :

A. 143

B. 147

C. 137

D. 157

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

If the local maximum value of the function

$$f(x) = \left(\frac{\sqrt{3e}}{2\sin x}\right)^{\sin^2 x}, x \in \left(0, \frac{\pi}{2}\right)$$

, is $\frac{k}{e}$, then

$$\left(\frac{k}{e}\right)^8 + \frac{k^8}{e^5} + k^8$$

is equal to

Options :

A. $e^3 + e^6 + e^{10}$

B. $e^3 + e^5 + e^{11}$

C. $e^3 + e^6 + e^{11}$

D. $e^5 + e^6 + e^{11}$

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

The area of the region enclosed by the curve $y = x^3$ and its tangent at the point $(-1, -1)$ is :

Options :

A. $\frac{23}{4}$

B. $\frac{19}{4}$

C. $\frac{27}{4}$

D. $\frac{31}{4}$

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

Let D be the domain of the function

$$f(x) = \sin^{-1}\left(\log_{3x}\left(\frac{6 + 2\log_3 x}{-5x}\right)\right)$$

. If the range of the function $g : D \to \mathbb{R}$ defined by

$$g(x) = x - [x], ([x]$$

is the greatest integer function), is (α, β), then

$$\alpha^2 + \frac{5}{\beta}$$

is equal to

Options :

A. 45

B. 136

C. 46

D. nearly 135

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

$$\frac{1}{n+1}{}^nC_n + \frac{1}{n}{}^nC_{n-1} + \ \ldots\ + \frac{1}{2}{}^nC_1 + {}^nC_0 = \frac{1023}{10}$$

then n is equal to :

Options :

A. 9

B. 6

C. 7

D. 8

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

Let

$$< a_n >$$

be a sequence such that

$$a_1 + a_2 + \ \ldots \ + a_n = \frac{n^2 + 3n}{(n+1)(n+2)}$$

. If

$$28 \sum_{k=1}^{10} \frac{1}{a_k} = p_1 p_2 p_3 \ldots p_m$$

, where $p_1, p_2, \ \ldots ., p_m$ are the first m prime numbers, then m is equal to

Options :

A. 5

B. 7

C. 6

D. 8

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

Among the two statements

$(S1) : (p \Rightarrow q) \wedge (p \wedge (\sim q))$ is a contradiction and

$$(S2) : (p \wedge q) \vee ((\sim p) \wedge q) \vee (p \wedge (\sim q)) \vee ((\sim p) \wedge (\sim q))$$

is a tautology

Options :

A. both are false.

B. only (S1) is true.

C. both are true.

D. only (S2) is true.

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 a, b, c be three distinct real numbers, none equal to one. If the vectors $a\hat{i} + \hat{j} + \hat{k}, \hat{i} + b\hat{j} + \hat{k}$ and $\hat{i} + \hat{j} + c\hat{k}$ are coplanar, then

$$\frac{1}{1-a} + \frac{1}{1-b} + \frac{1}{1-c}$$

is equal to :

Options :

A. -2

B. 1

C. -1

D. 2

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

Let

$$\lambda \in \mathbb{Z}, \vec{a} = \lambda\hat{i} + \hat{j} - \hat{k}$$

and

$$\vec{b} = 3\hat{i} - \hat{j} + 2\hat{k}$$

. Let $\vec{c}$ be a vector such that

$$(\vec{a} + \vec{b} + \vec{c}) \times \vec{c} = \vec{0}, \vec{a} \cdot \vec{c} = -17$$

and

$$\vec{b} \cdot \vec{c} = -20$$

. Then $|\vec{c} \times (\lambda\hat{i} + \hat{j} + \hat{k})|^2$ is equal to :

Options :

A. 53

B. 62

C. 49

D. 46

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

The sum, of the coefficients of the first 50 terms in the binomial expansion of $(1 - x)^{100}$, is equal to

Options :

A. $^{99}C_{49}$

B. $^{101}C_{50}$

C. $-^{99}C_{49}$

D. $-^{101}C_{50}$

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 the plane P:

$$4x - y + z = 10$$

be rotated by an angle $\frac{\pi}{2}$ about its line of intersection with the plane $x + y - z = 4$. If α is the distance of the point $(2,3,-4)$ from the new position of the plane P, then 35α is equal to :

Options :

A. 126

B. 105

C. 85

D. 90

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

In a triangle ABC, if

$$\cos A + 2\cos B + \cos C = 2$$

and the lengths of the sides opposite to the angles A and C are 3 and 7 respectively, then $\cos A - \cos C$ is equal to

Options :

A. $\frac{3}{7}$

B. $\frac{9}{7}$

C. $\frac{10}{7}$

D. $\frac{5}{7}$

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

$$D_k = \begin{vmatrix} 1 & 2k & 2k-1 \\ n & n^2+n+2 & n^2 \\ n & n^2+n & n^2+n+2 \end{vmatrix}$$

. If

$$\sum_{k=1}^{n} D_k = 96$$

, then n 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 the digits a, b, c be in A. P. Nine-digit numbers are to be formed using each of these three digits thrice such that three consecutive digits are in A.P. at least once. How many such numbers can be formed?

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

Two circles in the first quadrant of radii r_1 and r_2 touch the coordinate axes. Each of them cuts off an intercept of 2 units with the line $x + y = 2$. Then $r_1^2 + r_2^2 - r_1 r_2$ 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

A fair

$$n(n > 1)$$

faces die is rolled repeatedly until a number less than n appears. If the mean of the number of tosses required is $\frac{n}{9}$, then n 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

If

$$\int_{-0.15}^{0.15} |100x^2 - 1|dx = \frac{k}{3000}$$

, then k 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

The number of relations, on the set {1,2,3} containing (1,2) and (2,3), which are reflexive and transitive but not symmetric, is _____.

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 $[x]$ be the greatest integer $\leq x$. Then the number of points in the interval $(-2,1)$, where the function

$$f(x) = |[x]| + \sqrt{x - [x]}$$

is discontinuous, is _____.

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

Let the positive numbers a_1, a_2, a_3, a_4 and a_5 be in a G.P. Let their mean and variance be $\frac{31}{10}$ and $\frac{m}{n}$ respectively, where m and n are co-prime. If the mean of their reciprocals is $\frac{31}{40}$ and $a_3 + a_4 + a_5 = 14$, then $m + n$ is equal to _____.

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

Let

$$I(x) = \int \sqrt{\frac{x+7}{x}}\, dx$$

and

$$I(9) = 12 + 7\log_e 7$$

. If

$$I(1) = \alpha + 7\log_e(1 + 2\sqrt{2}\ )$$

, then α^4 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 the plane $x + 3y - 2z + 6 = 0$ meet the co-ordinate axes at the points A, B, C. If the orthocenter of the triangle ABC is

$$\left(\alpha, \beta, \frac{6}{7}\right)$$

, then $98(\alpha + \beta)^2$ 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

A particle is executing simple harmonic motion (SHM). The ratio of potential energy and kinetic energy of the particle when its displacement is half of its amplitude will be

Options :

A. 1 : 1

B. 1 : 4

C. 2 : 1

D. 1 : 3

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

Given below are two statements:

Statement I : A truck and a car moving with same kinetic energy are brought to rest by applying breaks which provide equal retarding forces. Both come to rest in equal distance.

Statement II : A car moving towards east takes a turn and moves towards north, the speed remains unchanged. The acceleration of the car is zero.

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

Options :

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

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

C. Both Statement I and Statement II are correct.

D. Both Statement I and Statement II are incorrect.

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

Match List I with List II

	LIST I		**LIST II**
A.	Spring constant	I.	$[T^{-1}]$
B.	Angular speed	II.	$[MT^{-2}]$
C.	Angular momentum	III.	$[ML^2]$
D.	Moment of inertia	IV.	$[ML^2T^{-1}]$

Choose the correct answer from the options given below:

Options :

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

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

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

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

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

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

Assertion A : EM waves used for optical communication have longer wavelengths than that of microwave, employed in Radar technology.

Reason R : Infrared EM waves are more energetic than microwaves, (used in Radar)

In the light of given statements, choose the correct answer from the options given below.

Options :

A. Both A and R are true but R is NOT the correct explanation of A

B. A is true but R is false

C. Both A and R are true and r is the correct explanation of A

D. A is false but R is true

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

The ratio of escape velocity of a planet to the escape velocity of earth will be:-

Given: Mass of the planet is 16 times mass of earth and radius of the planet is 4 times the radius of earth.

Options :

A. $1:4$

B. $1:\sqrt{2}$

C. $4:1$

D. $2:1$

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

Two satellites A and B move round the earth in the same orbit. The mass of A is twice the mass of B. The quantity which is same for the two satellites will be

Options :

A. Potential energy

B. Kinetic energy

C. Total energy

D. Speed

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

Three forces

$$F_1 = 10\ \text{N}, F_2 = 8\ \text{N},\ \text{F}_3 = 6\ \text{N}$$

are acting on a particle of mass 5 kg. The forces F_2 and F_3 are applied perpendicularly so that particle remains at rest. If the force F_1 is removed, then the acceleration of the particle is:

Options :

A. $4.8\ \text{ms}^{-2}$

B. $7\ \text{ms}^{-2}$

C. $2\ \text{ms}^{-2}$

D. $0.5\ \text{ms}^{-2}$

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

An ice cube has a bubble inside. When viewed from one side the apparent distance of the bubble is 12 cm. When viewed from the opposite side, the apparent distance of the bubble is observed as 4 cm. If the side of the ice cube is 24 cm, the refractive index of the ice cube is

Options :

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

B. $\frac{4}{3}$

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

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

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

A proton and an α-particle are accelerated from rest by 2 V and 4 V potentials, respectively. The ratio of their de-Broglie wavelength is :

Options :

A. 4 : 1

B. 2 : 1

C. 8 : 1

D. 16 : 1

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

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

Assertion A : If an electric dipole of dipole moment 30×10^{-5} C m is enclosed by a closed surface, the net flux coming out of the surface will be zero.

Reason R : Electric dipole consists of two equal and opposite charges.

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

Options :

A. A is true but R is false

B. A is false but R is true

C. Both A and R are true but R is NOT the correct explanation of A

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

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

Given below are two statements:

Statement I : The diamagnetic property depends on temperature.

Statement II : The induced magnetic dipole moment in a diamagnetic sample is always opposite to the magnetizing field.

In the light of given statements, choose the correct answer from the options given below.

Options :

A. Statement I is incorrect but Statement II is true.

B. Statement I is correct but Statement II is false.

C. Both Statement I and Statement II are False.

D. Both Statement I and Statement II are true.

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

A wire of resistance 160 Ω is melted and drawn in a wire of one-fourth of its length. The new resistance of the wire will be

Options :

A. 640 Ω

B. $40\ \Omega$

C. $16\ \Omega$

D. $10\ \Omega$

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

A ball is thrown vertically upward with an initial velocity of 150 m/s. The ratio of velocity after 3 s and 5 s is $\frac{x+1}{x}$. The value of x is _____.

{ take, $g = 10\ \text{m/s}^2$ }

Options :

A. -5

B. 10

C. 5

D. 6

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

If the r. m.s speed of chlorine molecule is 490 m/s at 27°C, the r. m. s speed of argon molecules at the same temperature will be (Atomic mass of argon $= 39.9\text{u}$, molecular mass of chlorine $= 70.9\text{u}$)

Options :

A. 451.7 m/s

B. 751.7 m/s

C. 551.7 m/s

D. 651.7 m/s

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 12.5 eV electron beam is used to bombard gaseous hydrogen at room temperature. The number of spectral lines emitted will be:

Options :

A. 2

B. 4

C. 3

D. 1

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

Given below are two statements:

Statement I : When the frequency of an a.c source in a series LCR circuit increases, the current in the circuit first increases, attains a maximum value and then decreases.

Statement II : In a series LCR circuit, the value of power factor at resonance is one.

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

Options :

A. Both Statement I and Statement II are False.

B. Statement I is incorrect but Statement II is true.

C. Both Statement I and Statement II are true.

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

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

In an n-p-n common emitter (CE) transistor the collector current changes from 5 mA to 16 mA for the change in base current from 100 μA and 200 μA, respectively. The current gain of transistor is _____.

Options :

A. 210

B. 0.9

C. 9

D. 110

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

An engine operating between the boiling and freezing points of water will have

A. efficiency more than 27%.

B. efficiency less than the efficiency of a Carnot engine operating between the same two temperatures.

C. efficiency equal to 27%

D. efficiency less than 27%

Choose the correct answer from the options given below:

Options :

A. B and C only

B. B and D only

C. B, C and D only

D. A and B only

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

A body cools from 80°C to 60°C in 5 minutes. The temperature of the surrounding is 20°C. The time it takes to cool from 60°C to 40°C is :

Options :

A. 500 s

B. $\frac{25}{3}$ S

C. 450 s

D. 420 s

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

The amplitude of $15\sin(1000\pi t)$ is modulated by $10\sin(4\pi t)$ signal. The amplitude modulated signal contains frequencies of

A. 500 Hz

B. 2 Hz

C. 250 Hz

D. 498 Hz

E. 502 Hz

Choose the correct answer from the options given below:

Options :

A. A and C only

B. A and B only

C. A and D only

D. A, D and E only

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

To maintain a speed of 80 km/h by a bus of mass 500 kg on a plane rough road for 4 km distance, the work done by the engine of the bus will be _____ KJ. [The coefficient of friction between tyre of bus and road is 0.04.]

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

64 identical drops each charged upto potential of 10 mV are combined to form a bigger drop. The potential of the bigger drop will be _____ mV.

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

For a rolling spherical shell, the ratio of rotational kinetic energy and total kinetic energy is $\frac{x}{5}$. 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 : 54 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The current flowing through a conductor connected across a source is 2 A and 1.2 A at 0°C and 100°C respectively. The current flowing through the conductor at 50°C will be _____ $\times 10^2$ mA.

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

Glycerin of density 1.25×10^3 kg m^{-3} is flowing through the conical section of pipe The area of cross-section of the pipe at its ends are 10 cm^2 and 5 cm^2 and pressure drop across its length is 3 Nm^{-2}. The rate of flow of glycerin through the pipe is $x \times 10^{-5}$ m^3 s^{-1}. 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 : 56 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Two convex lenses of focal length 20 cm each are placed coaxially with a separation of 60 cm between them. The image of the distant object formed by the combination is at _____ cm from the first lens.

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

For a certain organ pipe, the first three resonance frequencies are in the ratio of 1 : 3 : 5 respectively. If the frequency of fifth harmonic is 405 Hz and the speed of sound in air is 324 ms^{-1} the length of the organ pipe is _____ m.

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

A common example of alpha decay is

$$^{238}_{92}\mathrm{U} \longrightarrow {}^{234}_{90}\mathrm{Th} + {}_{2}\mathrm{He}^{4} + \mathrm{Q}$$

Given :

$$^{238}_{92}\mathrm{U} = 238.05060\ \mathrm{u}$$

,

$$^{234}_{90}\mathrm{Th} = 234.04360\ \mathrm{u}$$

,

$$^{4}_{2}\mathrm{He} = 4.00260\ \mathrm{u}$$

and

$$1\mathrm{u} = 931.5\frac{\mathrm{MeV}}{c^2}$$

The energy released (Q) during the alpha decay of $^{238}_{92}\mathrm{U}$ is _____ MeV

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

A conducting circular loop is placed in a uniform magnetic field of 0.4 T with its plane perpendicular to the field. Somehow, the radius of the loop starts expanding at a constant rate of 1 mm/s. The magnitude of induced emf in the loop at an instant when the radius of the loop is 2 cm will be _____ μV.

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 compass needle oscillates 20 times per minute at a place where the dip is 30° and 30 times per minute where the dip is 60°. The ratio of total magnetic field due to the earth at two places respectively is

$$\frac{4}{\sqrt{x}}$$

. The value of x is

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

Given below are two statements :

Statement I : Boron is extremely hard indicating its high lattice energy.

Statement II : Boron has highest melting and boiling point compared to its other group members.

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

Options :

A. Both Statement I and Statement II are incorrect

B. Statement I is incorrect but Statement II is correct

C. Statement I is correct but Statement II is incorrect

D. Both statement I and Statement II are correct

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

Match List I with List II

	LIST I Complex		**LIST II CFSE (Δ_0)**
A.	$[Cu(NH_3)_6]^{2+}$	I.	-0.6
B.	$[Ti(H_2O)_6]^{3+}$	II.	-2.0
C.	$[Fe(CN)_6]^{3-}$	III.	-1.2
D.	$[NiF_6]^{4-}$	IV.	-0.4

Choose the correct answer from the options given below:

Options :

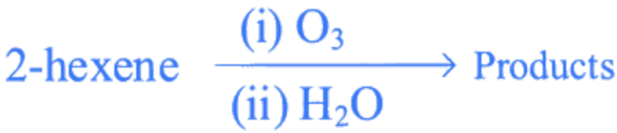
A. A-I, B-IV, C-II, D-III

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

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

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

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 two products formed in above reaction are -

Options :

A. Butanal and acetaldehyde

B. Butanoic acid and acetic acid

C. Butanal and acetic acid

D. Butanoic acid and acetaldehyde

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 bond order and magnetic property of acetylide ion are same as that of

Options :

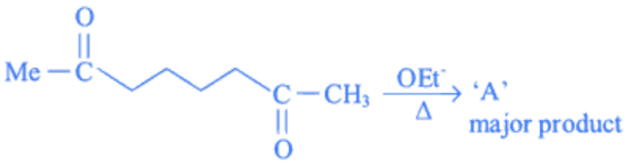
A. O_2^+

B. O_2^-

C. N_2^+

D. NO^+

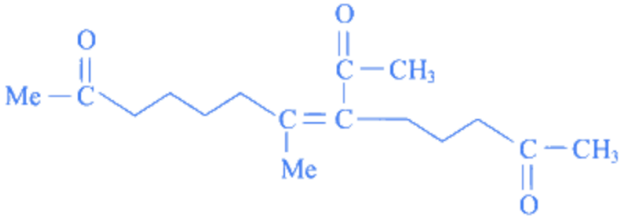
Question Number : 65 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical



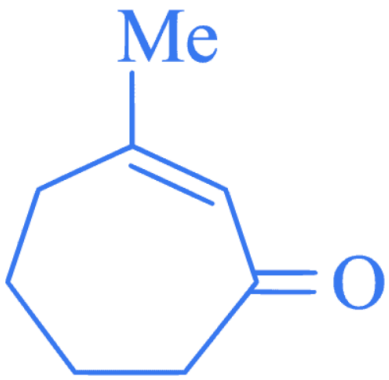
'A' in the above reaction is:

Options :

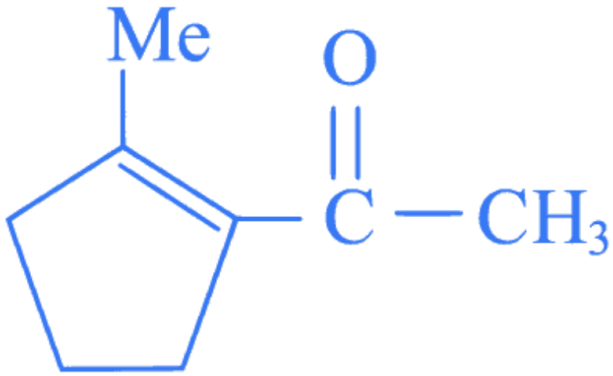
A.



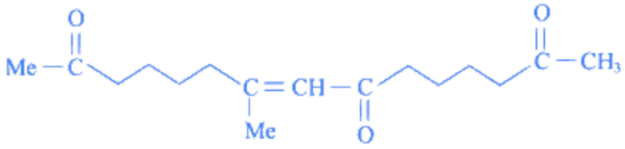
B.



C.



D.



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

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

Assertion A:

5f

electrons can participate in bonding to a far greater extent than 4f electrons

Reason R:

5f

orbitals are not as buried as 4f orbitals

In the light of the above statements, choose the correct answer from the options given below

Options :

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

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

C. A is true but R is false

D. A is false but R is true

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

A metal chloride contains 55.0% of chlorine by weight . 100 mL vapours of the metal chloride at STP weigh 0.57 g. The molecular formula of the metal chloride is

(Given: Atomic mass of chlorine is 35.5u)

Options :

A. MCl_2

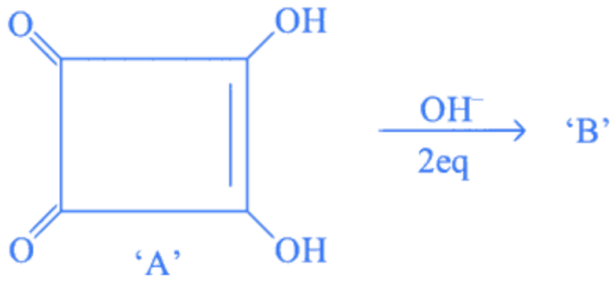
B. MCl_4

C. MCl_3

D. MCl

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

Correct statements for the given reaction are :



A. Compound 'B' is aromatic

B. The completion of above reaction is very slow

C. 'A' shows tautomerism

D. The bond lengths of C-C in compound *B* are found to be same

Choose the correct answer from the options given below:

Options :

A. B, C and D only

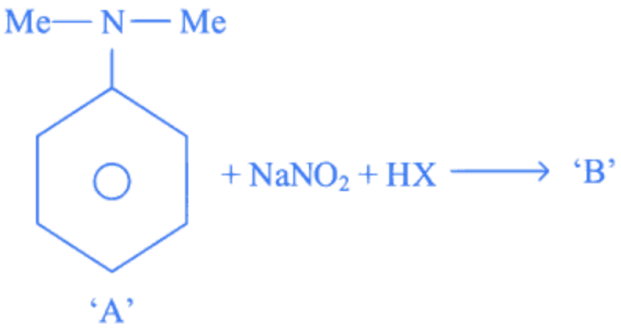
B. A, C and D only

C. A, B and D only

D. A, B and C only

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

The incorrect statement regarding the reaction given below is



Options :

A. 'B' is N-nitroso ammonium compound

B. The product 'B' formed in the above reaction is p-nitroso compound at low temperature

C. The electrophile involved in the reaction is NO^+

D. The reaction occurs at low temperature

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

For lead storage battery pick the correct statements

A. During charging of battery, $PbSO_4$ on anode is converted into PbO_2

B. During charging of battery, $PbSO_4$ on cathode is converted into PbO_2

C. Lead storage battery consists of grid of lead packed with PbO_2 as anode

D. Lead storage battery has ~38% solution of sulphuric acid as an electrolyte

Choose the correct answer from the options given below:

Options :

A. A, B, D only

B. B, C only

C. B, C, D only

D. B, D only

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

Given below are two statements :

Statement I :

$SbCl_5$

is more covalent than $SbCl_3$

Statement II: The higher oxides of halogens also tend to be more stable than the lower ones.

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

Options :

A. Both statement I and Statement II are correct

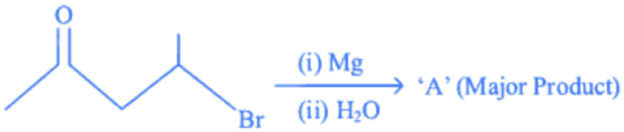
B. Both Statement I and Statement II are incorrect

C. Statement I is correct but Statement II is incorrect

D. Statement I is incorrect but Statement II is correct

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

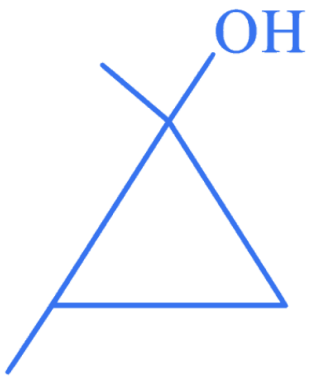
In the following reaction



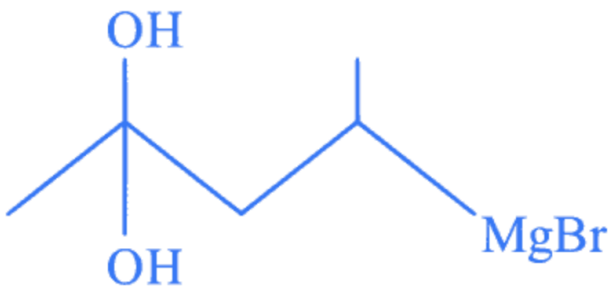
'A' is

Options :

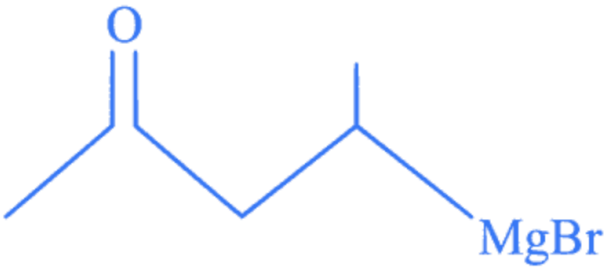
A.



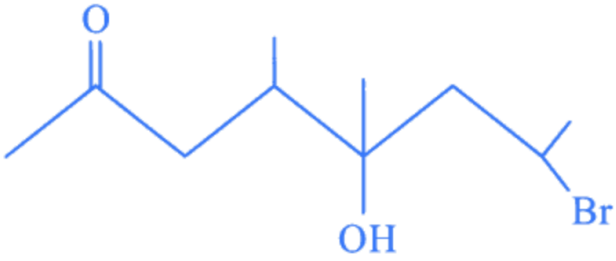
B.



C.

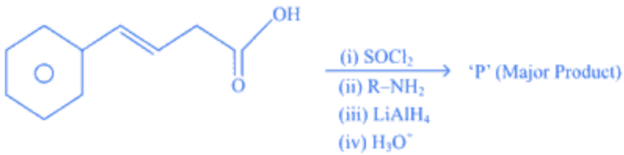


D.



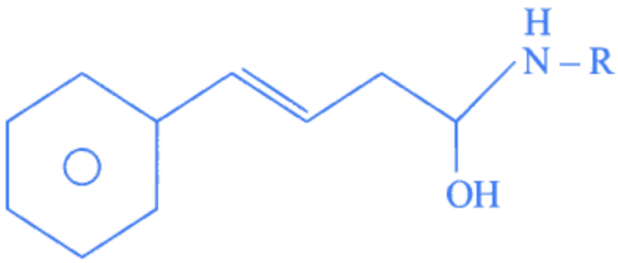
Question Number : 73 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The major product 'P' formed in the following sequence of reactions is

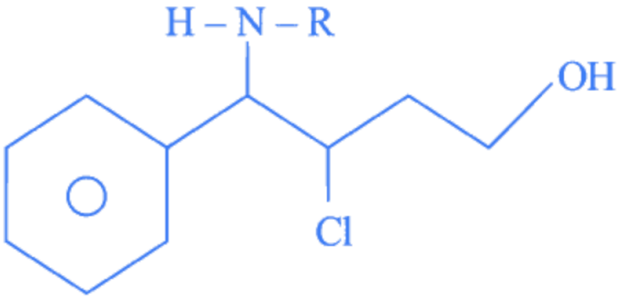


Options :

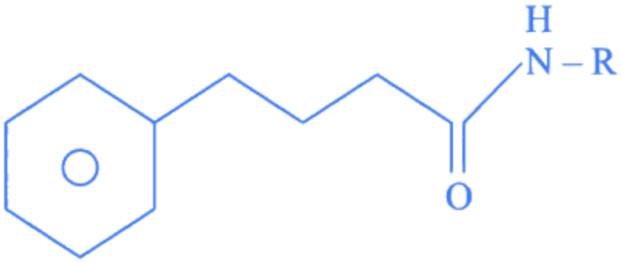
A.



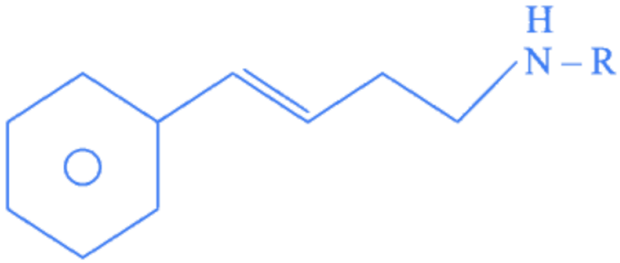
B.



C.



D.



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

The density of alkali metals is in the order :

Options :

A. $Na < K < Cs < Rb$

B. $K < Na < Rb < Cs$

C. $K < Cs < Na < Rb$

D. $Na < Rb < K < Cs$

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 Type of Hydride		**LIST II Example**
A.	Electron deficient hydride	I.	MgH_2
B.	Electron rich hydride	II.	HF
C.	Electron precise hydride	III.	B_2H_6
D.	Saline hydride	IV.	CH_4

Choose the correct answer from the options given below:

Options :

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

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

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

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

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

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

Assertion A : In the Ellingham diagram, a sharp change in slope of the line is observed for Mg → MgO at ~1120°C

Reason R: There is a large change of entropy associated with the change of state

In the light of the above statements, choose the correct answer from the options given below

Options :

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

B. **A** is false but **R** is true

C. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**

D. **A** is true but **R** is false

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

Match List I with List II

	LIST I		**LIST II**
A.	Nitrogen oxides in air	I.	Eutrophication
B.	Methane in air	II.	pH of rain water becomes 5.6
C.	Carbon dioxide	III.	Global warming
D.	Phosphate fertilisers in water	IV.	Acid rain

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

Four gases A, B, C and D have critical temperatures 5.3,33.2,126.0 and 154.3 K respectively. For their adsorption on a fixed amount of charcoal, the correct order is:

Options :

A. D > C > B > A

B. $C > B > D > A$

C. $D > C > A > B$

D. $C > D > B > A$

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

Match List I with List II

	LIST I (Examples)		**LIST II (Type)**
A.	2-chloro-1,3- butadiene	I.	Biodegradable polymer
B.	Nylon 2-nylon 6	II.	Synthetic Rubber
C.	Polyacrylonitrile	III.	Polyester
D.	Dacron	IV.	Addition Polymer

Choose the correct answer from the options given below:

Options :

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

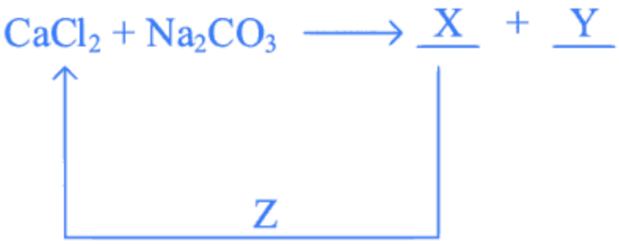
B. A-IV, B-I, C-III, D-II

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

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

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

In the given reaction cycle



X, Y and Z respectively are :

Options :

A.

X	Y	Z
$CaCO_3$	NaCl	KCl

B.

X	Y	Z
CaO	$NaCl + CO_2$	NaCl

C.

X	Y	Z
$CaCO_3$	NaCl	HCl

D.

X	Y	Z
CaO	$NaCl + CO_2$	KCI

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

In an oligopeptide named Alanylglycylphenyl alanyl isoleucine, the number of sp^2 hybridised carbons is _____.

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

80 mole percent of $MgCl_2$ is dissociated in aqueous solution. The vapour pressure of 1.0 molal aqueous solution of $MgCl_2$ at 38°C is _____ mm Hg. (Nearest integer)

Given : Vapour pressure of water at 38°C is 50 mm Hg

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

Values of work function (W_0) for a few metals are given below

Metal	Li	Na	K	Mg	Cu	Ag
W_0/eV	2.42	2.3	2.25	3.7	4.8	4.3

The number of metals which will show photoelectric effect when light of wavelength 400 nm falls on it is _____

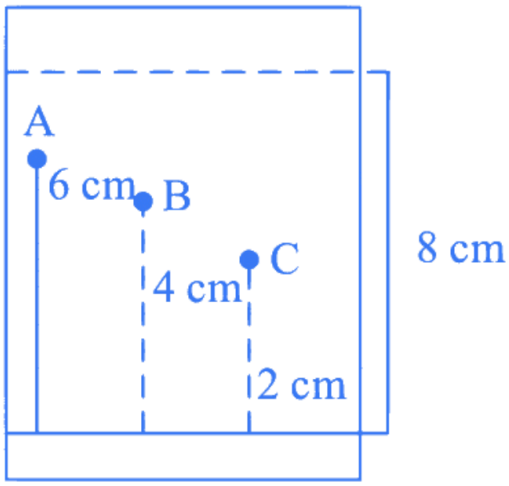
Given:

$$h = 6.6 \times 10^{-34} \text{ J s}$$
$$c = 3 \times 10^{8} \text{ ms}^{-1}$$
$$e = 1.6 \times 10^{-19} \text{C}$$

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

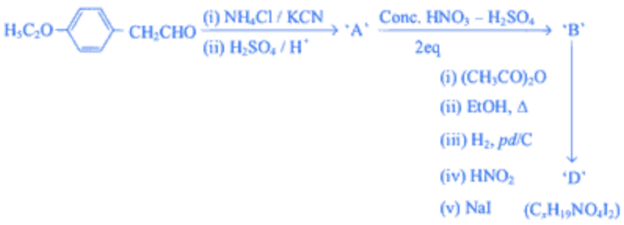
Question Number : 84 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Three organic compounds A, B and C were allowed to run in thin layer chromatography using hexane and gave the following result (see figure). The R_f value of the most polar compound is _____ $\times 10^{-2}$



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 value of x in compound 'D' is _____.

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

The mass of NH_3 produced when 131.8 kg of cyclohexanecarbaldehyde undergoes Tollen's test is _____ kg. (Nearest Integer)

Molar Mass of

C = 12g/mol

N = 14g/mol

O = 16g/mol

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

The reaction $2NO + Br_2 \rightarrow 2NOBr$

takes places through the mechanism given below:

$NO + Br_2 \Leftrightarrow NOBr_2$ (fast)

$NOBr_2 + NO \rightarrow 2NOBr$ (slow)

The overall order of the reaction is _____.

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

An analyst wants to convert 1 L HCl of

$$pH = 1$$

to a solution of HCl of pH 2. The volume of water needed to do this dilution is _____ mL. (Nearest integer)

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

One mole of an ideal gas at 350 K is in a 2.0 L vessel of thermally conducting walls, which are in contact with the surroundings. It undergoes isothermal reversible expansion from 2.0 L to 3.0 L against a constant pressure of 4 atm. The change in entropy of the surroundings (ΔS) is _____ JK^{-1} (Nearest integer)

Given:

$$R = 8.314\ J\ K^{-1}\ mol^{-1}$$

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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

At 600 K, the root mean square (rms) speed of gas X (molar mass $= 40$) is equal to the most probable speed of gas Y at 90 K. The molar mass of the gas Y is _____ $g\ mol^{-1}$. (Nearest integer)

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