National Testing Agency

Question Paper Name :	B Tech 27 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 area of the polygon, whose vertices are the non-real roots of the equation

$$z = iz^2$$

is :

Options :

A. $\frac{3\sqrt{3}}{4}$

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

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

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

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 system of linear equations

$$x + 2y + z = 2$$

,

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

,

$$-\alpha x + y + 2z = -\alpha$$

be inconsistent. Then α is equal to :

Options :

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

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

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

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

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

$$x = \sum_{n=0}^{\infty} a^n, y = \sum_{n=0}^{\infty} b^n, z = \sum_{n=0}^{\infty} c^n$$

, where a, b, c are in A.P. and $|a| < 1$, $|b| < 1$, $|c| < 1$, $abc \neq 0$, then :

Options :

A. x, y, z are in A.P.

B. x, y, z are in G.P.

C. $\frac{1}{x}$, $\frac{1}{y}$, $\frac{1}{z}$ are in A.P.

$\frac{1}{x}$

+

$\frac{1}{y}$

+

$\frac{1}{z}$

D. $= 1 - (a + b + c)$

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 a be an integer such that

$$\lim_{x \to 7} \frac{18 - [1 - x]}{[x - 3a]}$$

exists, where [t] is greatest integer $\leq$ t. Then a is equal to :

Options :

A. -6

B. -2

C. 2

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 number of distinct real roots of $x^4 - 4x + 1 = 0$ is :

Options :

A. 4

B. 2

C. 1

D. 0

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

$$\cos^{-1}\left(\frac{y}{2}\right) = \log_e\left(\frac{x}{5}\right)^5,\ |y| < 2$$

, then :

Options :

A. $x^2y'' + xy' - 25y = 0$

B. $x^2y'' - xy' - 25y = 0$

C. $x^2y'' - xy' + 25y = 0$

D. $x^2y'' + xy' + 25y = 0$

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

$$\int \frac{(x^2+1)e^x}{(x+1)^2}dx = f(x)e^x + C$$

, where C is a constant, then $\frac{d^3f}{dx^3}$ at x = 1 is equal to :

Options :

A. $-\frac{3}{4}$

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

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

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

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

The value of the integral

$$\int_{-2}^{2} \frac{|x^3+x|}{(e^{x|x|}+1)}dx$$

is equal to :

Options :

A. $5e^2$

B. $3e^{-2}$

C. 4

D. 6

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

If

$$\frac{dy}{dx} + \frac{2^{x-y}(2^y - 1)}{2^x - 1} = 0$$

, x, y > 0, y(1) = 1, then y(2) is equal to :

Options :

A. $2 + \log_2 3$

B. $2 + \log_3 2$

C. $2 - \log_3 2$

D. $2 - \log_2 3$

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

In an isosceles triangle ABC, the vertex A is (6, 1) and the equation of the base BC is 2x + y = 4. Let the point B lie on the line x + 3y = 7. If (α, β) is the centroid of ΔABC, then $15(\alpha + \beta)$ is equal to :

Options :

A. 39

B. 41

C. 51

D. 63

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

Let the eccentricity of an ellipse

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

, $a>b$, be $\frac{1}{4}$. If this ellipse passes through the point

$$\left(-4\sqrt{\frac{2}{5}},3\right)$$

, then a^2+b^2 is equal to :

Options :

A. 29

B. 31

C. 32

D. 34

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

If two straight lines whose direction cosines are given by the relations $l+m-n=0$, $3l^2+m^2+cnl=0$ are parallel, then the positive value of c is :

Options :

A. 6

B. 4

C. 3

D. 2

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

Let

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

and

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

. Then the number of vectors $\vec{b}$ such that

$$\vec{b}\times\vec{c}=\vec{a}$$

and $|\vec{b}|\in\{1,2,.....,10\}$ is :

Options :

A. 0

B. 1

C. 2

D. 3

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

Five numbers x_1, x_2, x_3, x_4, x_5 are randomly selected from the numbers 1, 2, 3, ..., 18 and are arranged in the increasing order

$$(x_1 < x_2 < x_3 < x_4 < x_5)$$

. The probability that $x_2 = 7$ and $x_4 = 11$ is :

Options :

A. $\frac{1}{136}$

B. $\frac{1}{72}$

C. $\frac{1}{68}$

D. $\frac{1}{34}$

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

The value of

$$\cos\left(\frac{2\pi}{7}\right) + \cos\left(\frac{4\pi}{7}\right) + \cos\left(\frac{6\pi}{7}\right)$$

is equal to :

Options :

A. -1

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

C. $-\frac{1}{3}$

D. $-\frac{1}{4}$

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

$$\sin^{1}\left(\sin\frac{2\pi}{3}\right)+\cos^{-1}\left(\cos\frac{7\pi}{6}\right)+\tan^{-1}\left(\tan\frac{3\pi}{4}\right)$$

is equal to :

Options :

A. $\frac{11\pi}{12}$

B. $\frac{17\pi}{12}$

C. $\frac{31\pi}{12}$

D. $-\frac{3\pi}{4}$

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

$$\frac{dy}{dx}=\frac{ax-by+a}{bx+cy+a}$$

, where a, b, c are constants, represent a circle passing through the point (2, 5). Then the shortest distance of the point (11, 6) from this circle is :

Options :

A. 10

B. 8

C. 7

D. 5

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 lengths of the sides of a triangle are $10 + x^2$, $10 + x^2$ and $20 - 2x^2$. If for $x = k$, the area of the triangle is maximum, then $3k^2$ is equal to :

Options :

A. 5

B. 8

C. 10

D. 12

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 X be a random variable having binomial distribution B(7, p). If P(X = 3) = 5P(x = 4), then the sum of the mean and the variance of X is :

Options :

A. $\frac{105}{16}$

B. $\frac{7}{16}$

C. $\frac{77}{36}$

D. $\frac{49}{16}$

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

The boolean expression $(\sim (p \wedge q)) \vee q$ is equivalent to :

Options :

A. $q \rightarrow (p \wedge q)$

B. $p \rightarrow q$

C. $p \rightarrow (p \rightarrow q)$

D. $p \rightarrow (p \vee q)$

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 f : R → R be a function defined by

$$f(x) = \frac{2e^{2x}}{e^{2x} + e}$$

. Then

$$f\left(\frac{1}{100}\right) + f\left(\frac{2}{100}\right) + f\left(\frac{3}{100}\right) + \ \ldots\ldots\ + \ f\left(\frac{99}{100}\right)$$

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

If the sum of all the roots of the equation

$$e^{2x} - 11e^{x} - 45e^{-x} + \frac{81}{2} = 0$$

is $\log_e p$, then p 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

The number of ways, 16 identical cubes, of which 11 are blue and rest are red, can be placed in a row so that between any two red cubes there should be at least 2 blue cubes, is _____.

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

If the coefficient of x^{10} in the binomial expansion of

$$\left(\frac{\sqrt{x}}{5^{\frac{1}{4}}} + \frac{\sqrt{5}}{x^{\frac{1}{3}}}\right)^{60}$$

is $5^k \cdot l$, where l, k ∈ N and l is co-prime to 5, 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 : 25 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Let

$$A_1 = \{(x, y) : |x| \leq y^2, |x| + 2y \leq 8\}$$

and

$$A_2 = \{(x, y) : |x| + |y| \leq k\}$$

. If 27 (Area A_1) = 5 (Area A_2), 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

A rectangle R with end points of one of its sides as (1, 2) and (3, 6) is inscribed in a circle. If the equation of a diameter of the circle is $2x - y + 4 = 0$, then the area of R 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

The positive value of the determinant of the matrix A, whose

Adj(Adj(A)) =

$$\begin{pmatrix} 14 & 28 & -14 \\ -14 & 14 & 28 \\ 28 & -14 & 14 \end{pmatrix}$$

, 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

If the sum of the first ten terms of the series

$$\frac{1}{5} + \frac{2}{65} + \frac{3}{325} + \frac{4}{1025} + \frac{5}{2501} + \ldots.$$

is

$$\frac{m}{n}$$

, where m and n are co-prime numbers, 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

A circle of radius 2 unit passes through the vertex and the focus of the parabola $y^2 = 2x$ and touches the parabola

$$y = \left(x - \frac{1}{4}\right)^2 + \alpha$$

, where $\alpha > 0$. Then $(4\alpha - 8)^2$ 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 mirror image of the point (a, b, c) with respect to the plane $3x - 4y + 12z + 19 = 0$ be $(a - 6, \beta, \gamma)$. If $a + b + c = 5$, then $7\beta - 9\gamma$ 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 projectile is launched at an angle 'α' with the horizontal with a velocity 20 ms^{-1}. After 10 s, its inclination with horizontal is 'β'. The value of $\tan\beta$ will be : ($g = 10\ ms^{-2}$).

Options :

A. $\tan\alpha + 5\sec\alpha$

B. $\tan\alpha - 5\sec\alpha$

C. $2\tan\alpha - 5\sec\alpha$

D. $2\tan\alpha + 5\sec\alpha$

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 girl standing on road holds her umbrella at 45° with the vertical to keep the rain away. If she starts running without umbrella with a speed of $15\sqrt{2}$ kmh^{-1}, the rain drops hit her head vertically. The speed of rain drops with respect to the moving girl is :

Options :

A. $30\ kmh^{-1}$

B. $\frac{25}{\sqrt{2}}$ kmh^{-1}

C. $\frac{30}{\sqrt{2}}$ kmh^{-1}

D. $25\ kmh^{-1}$

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 silver wire has a mass (0.6 ± 0.006) g, radius (0.5 ± 0.005) mm and length (4 ± 0.04) cm. The maximum percentage error in the measurement of its density will be :

Options :

A. 4%

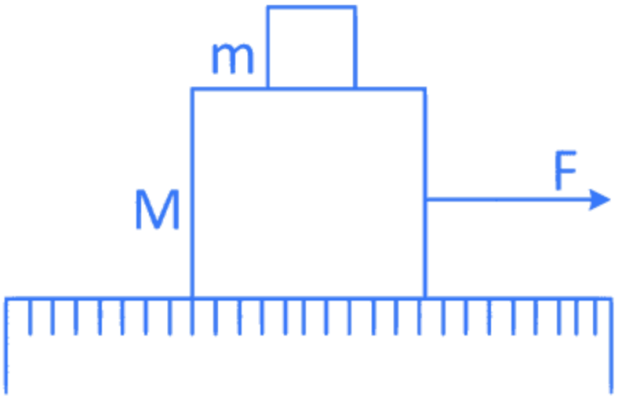
B. 3%

C. 6%

D. 7%

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 system of two blocks of masses m = 2 kg and M = 8 kg is placed on a smooth table as shown in figure. The coefficient of static friction between two blocks is 0.5. The maximum horizontal force F that can be applied to the block of mass M so that the blocks move together will be :



Options :

A. 9.8 N

B. 39.2 N

C. 49 N

D. 78.4 N

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

Two blocks of masses 10 kg and 30 kg are placed on the same straight line with coordinates (0, 0) cm and (x, 0) cm respectively. The block of 10 kg is moved on the same line through a distance of 6 cm towards the other block. The distance through which the block of 30 kg must be moved to keep the position of centre of mass of the system unchanged is :

Options :

A. 4 cm towards the 10 kg block

B. 2 cm away from the 10 kg block

C. 2 cm towards the 10 kg block

D. 4 cm away from the 10 kg block

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

A 72 Ω galvanometer is shunted by a resistance of 8 Ω. The percentage of the total current which passes through the galvanometer is :

Options :

A. 0.1%

B. 10%

C. 25%

D. 0.25%

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

Given below are two statements :

Statement I : The law of gravitation holds good for any pair of bodies in the universe.

Statement II : The weight of any person becomes zero when the person is at the centre of the earth.

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

Options :

A. Both Statement I and Statement II are true

B. Both Statement I and Statement II are false

C. Statement I is true but Statement II is false

D. Statement I is false but Statement II is true

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

What percentage of kinetic energy of a moving particle is transferred to a stationary particle when it strikes the stationary particle of 5 times its mass?

(Assume the collision to be head-on elastic collision)

Options :

A. 50.0%

B. 66.6%

C. 55.6%

D. 33.3%

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

The velocity of a small ball of mass 'm' and density d_1, when dropped in a container filled with glycerin, becomes constant after some time. If the density of glycerin is d_2, then the viscous force acting on the ball, will be :

Options :

A. $$mg\left(1-\frac{d_1}{d_2}\right)$$

B. $$mg\left(1-\frac{d_2}{d_1}\right)$$

C. $$mg\left(\frac{d_1}{d_2}-1\right)$$

D. $$mg\left(\frac{d_2}{d_1}-1\right)$$

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

The susceptibility of a paramagnetic material is 99. The permeability of the material in Wb/A-m, is :

[Permeability of free space $\mu_0 = 4\pi \times 10^{-7}$ Wb/A-m]

Options :

A. $4\pi \times 10^{-7}$

B. $4\pi \times 10^{-4}$

C. $4\pi \times 10^{-5}$

D. $4\pi \times 10^{-6}$

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

The current flowing through an ac circuit is given by

$I = 5 \sin(120\pi t)A$

How long will the current take to reach the peak value starting from zero?

Options :

A. $\frac{1}{60}$ s

B. 60 s

C. $\frac{1}{120}$ s

D. $\frac{1}{240}$ s

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

Match List-I with List-II :

	List - I		**List - II**
(a)	Ultraviolet rays	(i)	Study crystal structure
(b)	Microwaves	(ii)	Greenhouse effect
(c)	Infrared rays	(iii)	Sterilizing surgical instrument
(d)	X-rays	(iv)	Radar system

Choose the correct answer from the options given below :

Options :

A. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

B. (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)

C. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

D. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

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

An α particle and a carbon 12 atom has same kinetic energy K. The ratio of their de-Broglie wavelengths $(\lambda_\alpha : \lambda_{C12})$ is :

Options :

A. $1 : \sqrt{3}$

B. $\sqrt{3} : 1$

C. $3 : 1$

D. $2 : \sqrt{3}$

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 force of 10 N acts on a charged particle placed between two plates of a charged capacitor. If one plate of capacitor is removed, then the force acting on that particle will be.

Options :

A. 5 N

B. 10 N

C. 20 N

D. Zero

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

The displacement of simple harmonic oscillator after 3 seconds starting from its mean position is equal to half of its amplitude. The time period of harmonic motion is :

Options :

A. 6 s

B. 8 s

C. 12 s

D. 36 s

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

Consider a light ray travelling in air is incident into a medium of refractive index $\sqrt{2n}$. The incident angle is twice that of refracting angle. Then, the angle of incidence will be :

Options :

A. $\sin^{-1}\left(\sqrt{n}\ \right)$

B. $\cos^{-1}\left(\sqrt{\frac{n}{2}}\right)$

C. $\sin^{-1}\left(\sqrt{2n}\ \right)$

D. $2\cos^{-1}\left(\sqrt{\frac{n}{2}}\right)$

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

A hydrogen atom in its ground state absorbs 10.2 eV of energy. The angular momentum of electron of the hydrogen atom will increase by the value of :

(Given, Planck's constant = 6.6×10^{-34} Js).

Options :

A. 2.10×10^{-34} Js

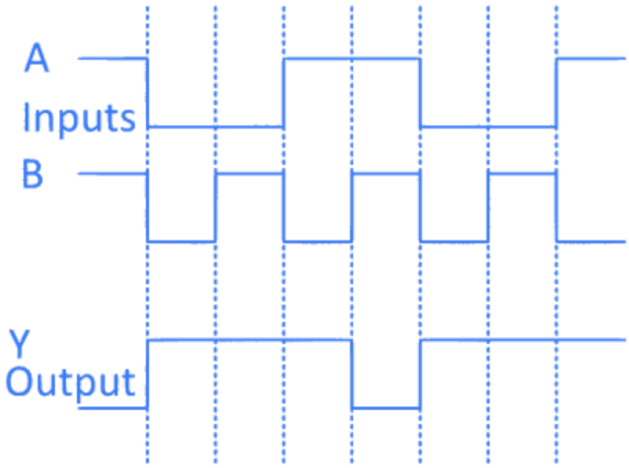
B. 1.05×10^{-34} Js

C. 3.15×10^{-34} Js

D. 4.2×10^{-34} Js

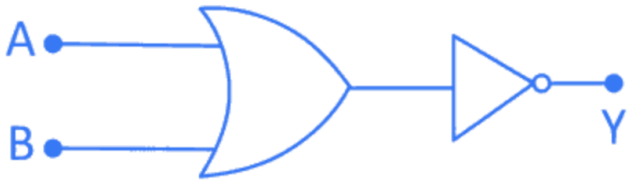
Question Number : 48 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Identify the correct Logic Gate for the following output (Y) of two inputs A and B.



Options :

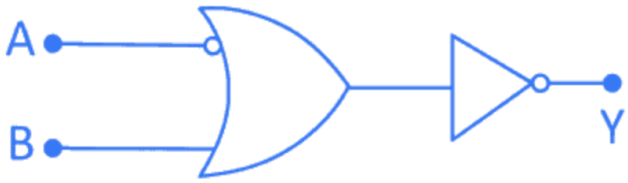
A.



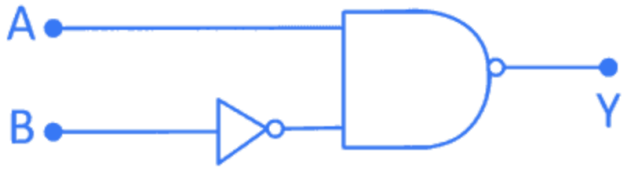
B.



C.



D.



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 mixture of hydrogen and oxygen has volume 2000 cm^3, temperature 300 K, pressure 100 kPa and mass 0.76 g. The ratio of number of moles of hydrogen to number of moles of oxygen in the mixture will be:

[Take gas constant R = 8.3 $JK^{-1}mol^{-1}$]

Options :

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

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

C. $\frac{1}{16}$

D. $\frac{16}{1}$

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

An observer moves towards a stationary source of sound with a velocity equal to one-fifth of the velocity of sound. The percentage change in the frequency will be :

Options :

A. 20%

B. 10%

C. 5%

D. 0%

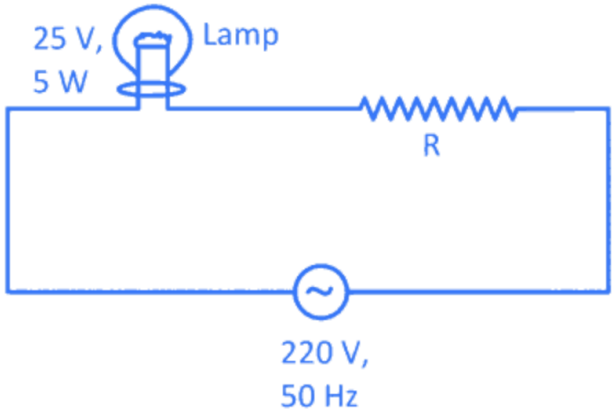
Physics Section B

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

A 220 V, 50 Hz AC source is connected to a 25 V, 5 W lamp and an additional resistance R in series (as shown in figure) to run the lamp at its peak brightness, then the value of R (in ohm) will be _____.



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

In Young's double slit experiment the two slits are 0.6 mm distance apart. Interference pattern is observed on a screen at a distance 80 cm from the slits. The first dark fringe is observed on the screen directly opposite to one of the slits. The wavelength of light will be _____ nm.

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

A beam of monochromatic light is used to excite the electron in Li^{++} from the first orbit to the third orbit. The wavelength of monochromatic light is found to be $x \times 10^{-10}$ m. The value of x is _____.

[Given hc = 1242 eV nm]

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 density in a cylindrical wire of radius 4 mm is 4×10^6 Am^{-2}. The current through the outer portion of the wire between radial distances $\frac{R}{2}$ and R is _____ π A.

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

A capacitor of capacitance 50 pF is charged by 100 V source. It is then connected to another uncharged identical capacitor. Electrostatic energy loss in the process is _____ nJ.

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

The area of cross-section of a large tank is 0.5 m^2. It has a narrow opening near the bottom having area of cross-section 1 cm^2. A load of 25 kg is applied on the water at the top in the tank. Neglecting the speed of water in the tank, the velocity of the water, coming out of the opening at the time when the height of water level in the tank is 40 cm above the bottom, will be _____ cms^{-1}. [Take g = 10 ms^{-2}]

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 pendulum of length 2 m consists of a wooden bob of mass 50 g. A bullet of mass 75 g is fired towards the stationary bob with a speed v. The bullet emerges out of the bob with a speed $\frac{v}{3}$ and the bob just completes the vertical circle. The value of v is _____ ms^{-1}. (if g = 10 m/s^2).

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

In a carnot engine, the temperature of reservoir is 527°C and that of sink is 200 K. If the work done by the engine when it transfers heat from reservoir to sink is 12000 kJ, the quantity of heat absorbed by the engine from reservoir is _____ $\times 10^6$ J.

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 cell, shunted by a 8 Ω resistance, is balanced across a potentiometer wire of length 3 m. The balancing length is 2 m when the cell is shunted by 4 Ω resistance. The value of internal resistance of the cell will be _____ Ω.

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

The height of a transmitting antenna at the top of a tower is 25 m and that of receiving antenna is, 49 m. The maximum distance between them, for satisfactory communication in LOS (Line-Of-Sight) is $K\sqrt{5} \times 10^2$ m. The value of K is _____.

(Assume radius of Earth is $64 \times 10^{+5}$ m) [Calculate upto nearest integer value]

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 : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) : At 10°C, the density of a 5 M solution of KCl [atomic masses of K & Cl are 39 & 35.5 g mol $^{-1}$ respectively], is 'x' g ml^{-1}. The solution is cooled to −21°C. The molality of the solution will remain unchanged.

Reason (R) : The molality of a solution does not change with temperature as mass remains unaffected with temperature.

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

Based upon VSEPR theory, match the shape (geometry) of the molecules in List-I with the molecules in List-II and select the most appropriate option.

	List - I (Shape)		**List - II (Molecules)**
(A)	T-shaped	(I)	XeF_4
(B)	Trigonal planar	(II)	SF_4
(C)	Square planar	(III)	ClF_3
(D)	See-saw	(IV)	BF_3

Options :

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

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

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

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

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

Match List-I with List-II.

	List - I		**List - II**
(A)	Spontaneous process	(I)	$\Delta H < 0$
(B)	Process with $\Delta P = 0$, $\Delta T = 0$	(II)	$\Delta G_{T,P} < 0$
(C)	$\Delta H_{reaction}$	(III)	Isothermal and isobaric process
(D)	Exothermic Process	(IV)	[Bond energies of molecules in reactants] − [Bond energies of product molecules

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

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

Assertion (A) : The ionic radii of O^{2-} and Mg^{2+} are same.

Reason (R) : Both O^{2-} and Mg^{2+} are isoelectronic species.

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 : 65 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 will have maximum stabilization due to crystal field?

Options :

A. $[Ti(H_2O)_6]^{3+}$

B. $[Co(H_2O)_6]^{2+}$

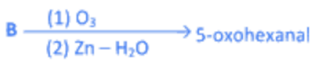
C. $[Co(CN)_6]^{3-}$

D. $[Cu(NH_3)_4]^{2+}$

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

'A' and 'B' respectively are:





Options :

A. 1-methylcyclohex-1,3-diene & cyclopentene.

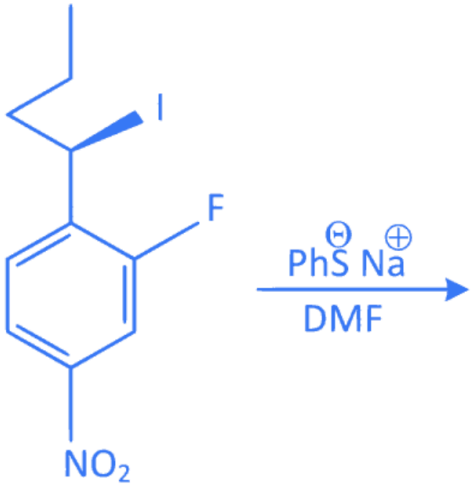
B. Cyclohex-1,3-diene & cyclopentene

C. 1-methylcyclohex-1,4-diene & 1-methylcyclopent-1-ene

D. Cyclohex-1,3-diene & 1-methylcyclopent-1-ene

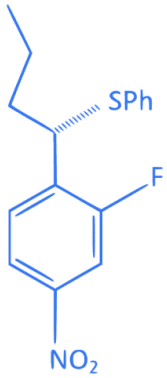
Question Number : 67 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The major product of the following reaction is :

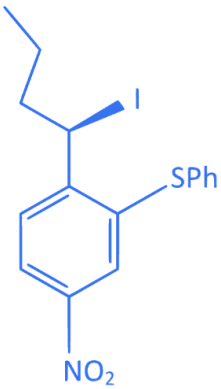


Options :

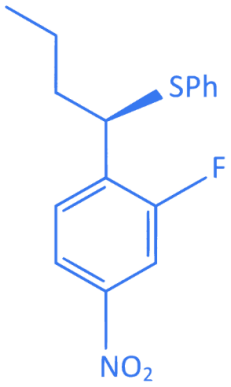
A.



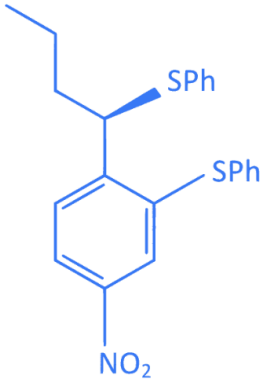
B.



C.

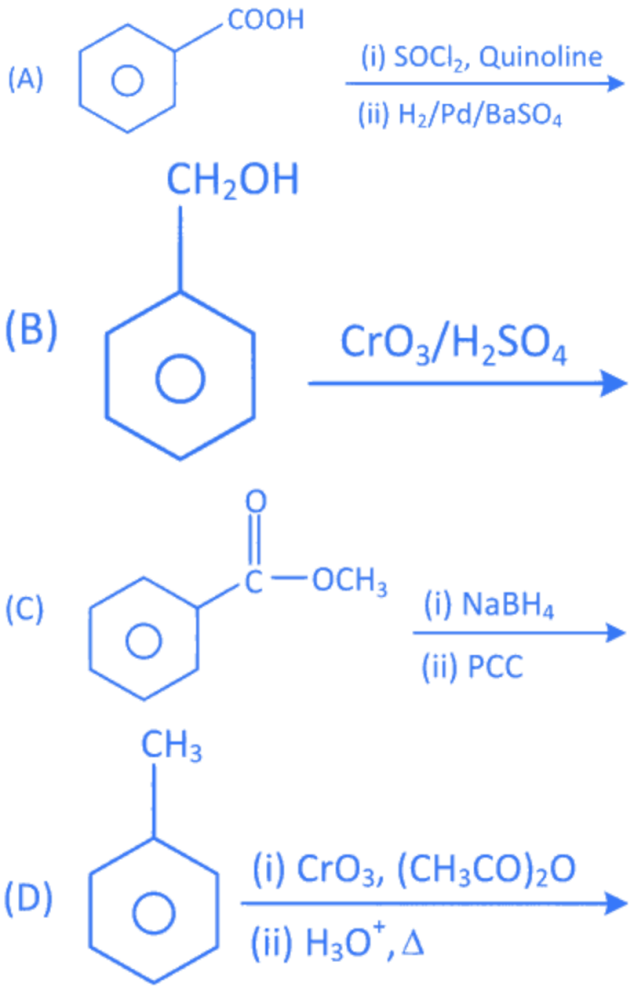


D.



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

Which of the following reactions will yield benzaldehyde as a product?



Options :

A. (B) and (C)

B. (C) and (D)

C. (A) and (D)

D. (A) and (C)

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

Given below are two statements :

Statement I : In Hofmann degradation reaction, the migration of only an alkyl group takes place from carbonyl carbon of the amide to the nitrogen atom.

Statement II : The group is migrated in Hofmann degradation reaction to electron deficient atom.

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.

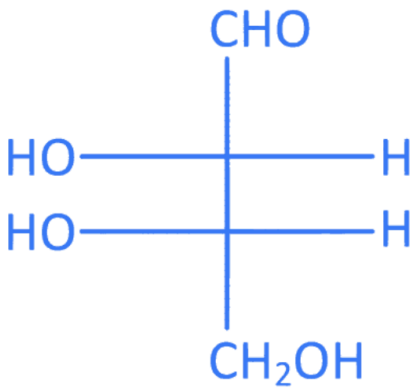
D. Statement I is incorrect but Statement II is correct.

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

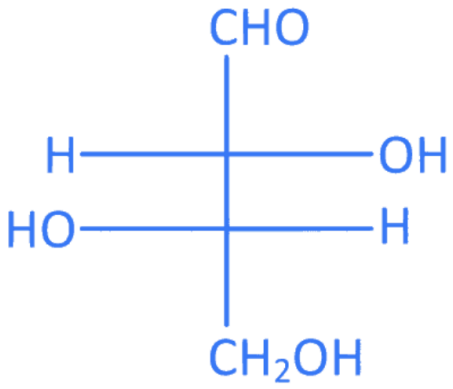
L-isomer of a compound 'A' ($C_4H_8O_4$) gives a positive test with $[Ag(NH_3)_2]^+$. Treatment of 'A' with acetic anhydride yields triacetate derivative. Compound 'A' produces an optically active compound (B) and an optically inactive compound (C) on treatment with bromine water and HNO_3 respectively. Compound (A) is :

Options :

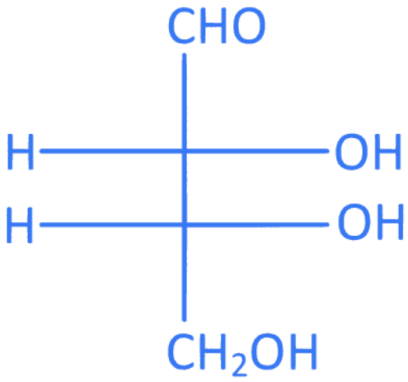
A.



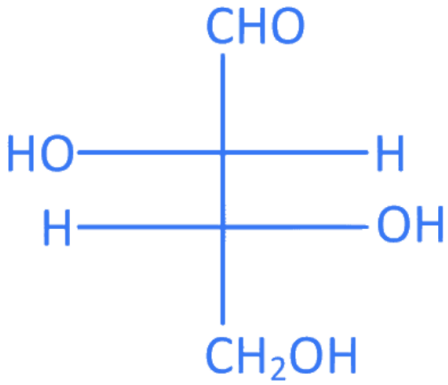
B.



C.



D.



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

Match List-I with List-II

	List - I		**List - II**
(A)	Lyophilic colloid	(I)	Liquid-liquid colloid
(B)	Emulsion	(II)	Protective colloid
(C)	Positively charged colloid	(III)	$FeCl_3$ + NaOH
(D)	Negatively charged colloid	(IV)	$FeCl_3$ + hot water

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

Match List-I with List-II

	List - I		**List - II**
(A)	Concentration of gold ore	(I)	Aniline
(B)	Leaching of alumina	(II)	NaOH
(C)	Froth stabiliser	(III)	SO_2
(D)	Blister copper	(IV)	NaCN

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

Addition of H_2SO_4 to BaO_2 produces :

Options :

A. BaO, SO_2 and H_2O

B. $BaHSO_4$ and O_2

C. $BaSO_4$, H_2 and O_2

D. $BaSO_4$ and H_2O_2

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

$BeCl_2$ reacts with $LiAlH_4$ to give :

Options :

A. $Be + Li[AlCl_4] + H_2$

B. $Be + AlH_3 + LiCl + HCl$

C. $BeH_2 + LiCl + AlCl_3$

D. $BeH_2 + Li[AlCl_4]$

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 (Si-Compounds)		**List - II (Si-Polymeric/Other Products**
(A)	$(CH_3)_4Si$	(I)	Chain Silicone
(B)	$(CH_3)Si(OH)_3$	(II)	Dimeric Silicone
(C)	$(CH_3)_2Si(OH)_2$	(III)	Silane
(D)	$(CH_3)_3Si(OH)$	(IV)	2D - Silicone

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

Heating white phosphorus with conc. NaOH solution gives mainly :

Options :

A. Na_3P and H_2O

B. H_3PO and NaH

C. $P(OH)_3$ and NaH_2PO_4

D. PH_3 and NaH_2PO_2

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

Given below are two Statements:

Statement I : Classical smog occurs in cool humid climate. It is a reducing mixture of smoke, fog and sulphur dioxide.

Statement II : Photochemical smog has components, ozone, nitric oxide, acrolein, formaldehyde, PAN etc.

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.

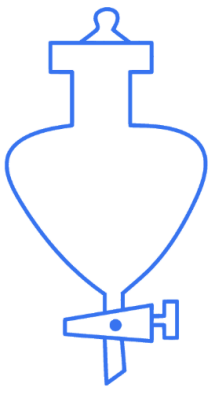
D. Statement I is incorrect but Statement II is correct.

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

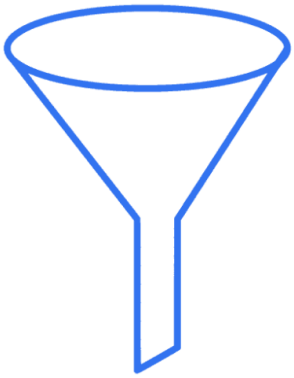
Which of the following is structure of a separating funnel?

Options :

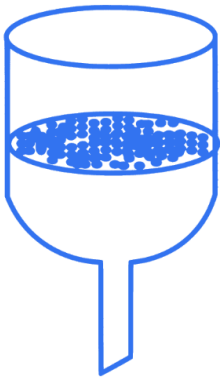
A.



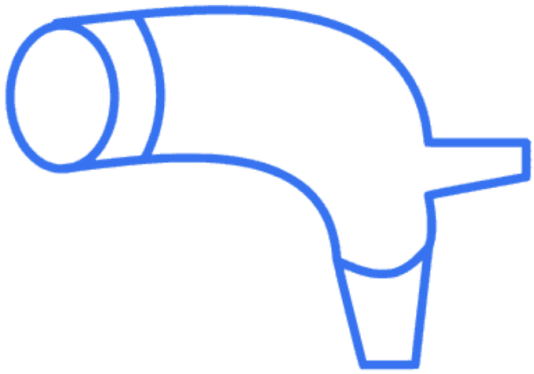
B.



C.



D.



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 (Polymer)		**List - II (Used in)**
(A)	Bakelite	(I)	Radio and television cabinets
(B)	Glyptal	(II)	Electrical switches
(C)	PVC	(III)	Paints and Lacquers
(D)	Polystyrene	(IV)	Water pipes

Choose the correct answer from the options given below :

Options :

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

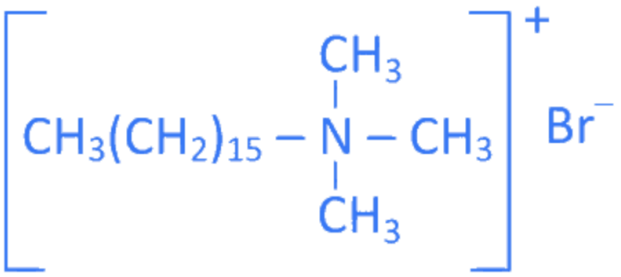
B. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

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

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

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

Match List - I with List - II.

	List - I		**List - II**
(A)		(I)	Dishwashing powder
(B)		(II)	Toothpaste
(C)	$C_{17}H_{35}COO^{-}Na^{+} + Na_2CO_3$ + Rosinate	(III)	Laundry soap
(D)	$CH_3(CH_2)_{16}COO(CH_2CH_2O)_nCH_2CH_2OH$	(IV)	Hair conditioner

Choose the correct answer from the options given below :

Options :

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

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

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

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

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

If the uncertainty in velocity and position of a minute particle in space are, 2.4×10^{-26} (m s^{-1}) and 10^{-7} (m) respectively. The mass of the particle in g is _____. (Nearest integer)

(Given : $h = 6.626 \times 10^{-34}$ Js)

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

2 g of a non-volatile non-electrolyte solute is dissolved in 200 g of two different solvents A and B whose ebullioscopic constants are in the ratio of 1 : 8. The elevation in boiling points of A and B are in the ratio $\frac{x}{y}$

(x : y). The value of y is _____. (Nearest integer)

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

$2NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$

In an experiment, 2.0 moles of NOCl was placed in a one-litre flask and the concentration of NO after equilibrium established, was found to be 0.4 mol/L. The equilibrium constant at 30°C is _____ $\times 10^{-4}$.

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 limiting molar conductivities of NaI, $NaNO_3$ and $AgNO_3$ are 12.7, 12.0 and 13.3 mS m^2 mol^{-1}, respectively (all at 25°C). The limiting molar conductivity of AgI at this temperature is _____ mS m^2 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 rate constant for a first order reaction is given by the following equation:

$$\ln k = 33.24 - \frac{2.0 \times 10^4 K}{T}$$

The activation energy for the reaction is given by _____ kJ mol^{-1}. (In nearest integer) (Given : 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 : 86 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

The number of statements correct from the following for Copper (at. no. 29) is/are _____.

(A) Cu(II) complexes are always paramagnetic.

(B) Cu(I) complexes are generally colourless

(C) Cu(I) is easily oxidized

(D) In Fehling solution, the active reagent has Cu(I)

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

Acidified potassium permanganate solution oxidises oxalic acid. The spin-only magnetic moment of the manganese product formed from the above reaction 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 : 88 Question Type : SA Display Question Number : Yes Keyboard Layout : Inscript

Two elements A and B which form 0.15 moles of A_2B and AB_3 type compounds. If both A_2B and AB_3 weigh equally, then the atomic weight of A is _____ times of atomic weight of B.

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

Total number of possible stereoisomers of dimethyl cyclopentane 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

Metal deficiency defect is shown by $Fe_{0.93}O$. In the crystal, some Fe^{2+} cations are missing and loss of positive charge is compensated by the presence of Fe^{3+} ions. The percentage of Fe^{2+} ions in the $Fe_{0.93}O$ crystals is _____. (Nearest integer)

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