All India Institute of Speech and Hearing

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	BASLP PCM 09th June 2024 Shift 1
Subject Name :	BASLP PCM
Creation Date :	2024-06-09 13:01:55
Duration :	150
Total Marks :	150
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

BASLP PCM

Group Number :	1
Group Id :	6981386
Group Maximum Duration :	0
Group Minimum Duration :	150
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	150
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Physics

Section Id :	69813816
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	69813816
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 698138651 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The number of significant figures in 0.06900 is

Options :

1. ✖ **5**

2. ✔ **4**

3. ✖ **2**

4. ✖ **3**

Question Number : 2 Question Id : 698138652 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The radius of a hydrogen atom is about 0.5 Å. What is the total atomic volume in m^3 of a mole of Hydrogen atoms?

Options :

1. ✖ $2 \times 10^{-8} m^3$

2. ✖ $4 \times 10^{-6} m^3$

3. ✔ $3 \times 10^{-7} m^3$

4. ✖ $4 \times 10^{-5} m^3$

Question Number : 3 Question Id : 698138653 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A bullet fired in to a fixed target losses half of it's velocity after penetrating distance of 3 cm.

How much further it will penetrate before coming to rest assuming that if faces constant

opposition to it's motion?

Options :

1. ✖ *3 cm*

2. ✖ 2.0 cm

3. ✖ 1.5 cm

4. ✔ 1.0 cm

Question Number : 4 Question Id : 698138654 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If Position of a particle is given by x = ($4t^2$ – 8t), then which of the following is true?

Options :

1. ✖ Acceleration is zero at t = 0

2. ✖ Velocity is zero at t=0

3. ✔ Velocity is zero at t=1s

4. ✖ **Velocity and acceleration will never be zero**

Question Number : 5 Question Id : 698138655 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The angle between A =i+ j and B=i -j is

Options :

1. ✖ 45^0

2. ✔ 90^0

3. ✖ 180^0

4. ✖ -45^0

Question Number : 6 Question Id : 698138656 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
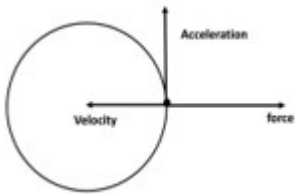
Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A and B vectors such that $|A+B|=|A|$, this necessarily implies,

Options :

1. ✖ always B=0

2. ✔ A,B are antiparallel

3. ✖ A,B are perpendicular

4. ✖ A.B ≤ 0

Question Number : 7 Question Id : 698138657 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0
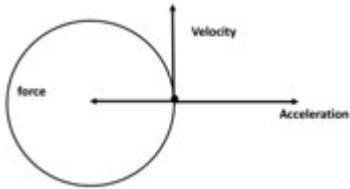
Question Label : Multiple Choice Question

A boy riding a merry-go-round moves in a horizontal circular path at a constant speed. Which of the following diagrams accurately depicts the direction of the boy's velocity, acceleration, and resultant horizontal force?
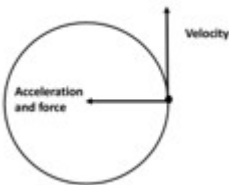
Options :

1. ✖

2. ✖

3. ✖

4. ✔

Question Number : 8 Question Id : 698138658 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A cricket ball of mass 0.25 kg with speed 10 m/s collides with a bat and returns with same speed with in 0.01s. The force acted on bat is

Options :

1. ✖ **25N**

2. ✖ **50N**

3. ✖ **250N**

4. ✔ **500N**

Question Number : 9 Question Id : 698138659 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A body of mass 2kg travels according to the law $x(t) = pt + qt^2 + rt^3$ where p= 3m/s q=4m/s r=5m/s. The force acting on the body at t = 2 seconds is

Options :

1. ✔ **136N**

2. ✖ **134N**

3. ✖ **158N**

4. ✖ **68N**

Question Number : 10 Question Id : 698138660 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A mass of 5 kg is moving along a circular path of radius 1 m. If the mass moves with 300 revolutions per minute, its kinetic energy would be

Options :

1. ✔ $250\pi^2$

2. ✖ $100\pi^2$

3. ✖ $5\pi^2$

4. ✖ 0

Question Number : 11 Question Id : 698138661 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The radius of gyration of a disc about its axis passing through its centre and perpendicular to its plane is

Options :

1. ✔ $R/\sqrt{2}$

2. ✖ $R/2$

3. ✖ $2R$

4. ✖ R

Question Number : 12 Question Id : 698138662 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

When a disc rotates with uniform angular velocity, which of the following is not true?

Options :

1. ✖ The sense of rotation remains same.

2. ✖ The orientation of the axis of rotation remains same.

3. ✖ The speed of rotation is non-zero and remains same.

4. ✔ The angular acceleration is non-zero and remains same.

Question Number : 13 Question Id : 698138663 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

P is a point at a distance "a" from the centre of a spherical shell of mass M and radius r (a>r). The gravitational potential at P is

Options :

1. ✖ -GM/r

2. ✔ –GM/a

3. ✖ -GMr/a^2

4. ✖ –GM (a-r)/r^2

Question Number : 14 Question Id : 698138664 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Two rods of identical dimensions, with Young's moduli Y_1 and Y_2 are joined end to end. The equivalent Young's modulus for the composite rod is

Options :

1. ✔ $2Y_1Y_2/Y_1+Y_2$

2. ✖ Y_1Y_2/Y_1+Y_2

3. ✖ $1/2(Y_1+Y_2)$

4. ✖ $1/Y_1+Y_2$

Question Number : 15 Question Id : 698138665 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An ideal fluid flows through a pipe of circular cross-section made of two sections with diameters 2.0 cm and 3.0 cm. The ratio of the velocities in the two pipes is

Options :

1. ✔ 9:4

2. ✖ 3:2

3. ✖ $\sqrt{3} : \sqrt{2}$

4. ✖ $\sqrt{2} : \sqrt{3}$

Question Number : 16 Question Id : 698138666 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A sphere, a cube and a thin circular plate, all of same material and same mass are initially heated to same high temperature.

Options :

1. ✖ **Plate will cool fastest and cube the slowest**

2. ✖ **Sphere will cool fastest and cube the slowest**

3. ✔ **Plate will cool fastest and sphere the slowest**

4. ✖ **Cube will cool fastest and plate the slowest**

Question Number : 17 Question Id : 698138667 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An ideal gas undergoes cyclic process ABCDA as shown in given P-V diagram (Fig). The amount of work done by the gas is
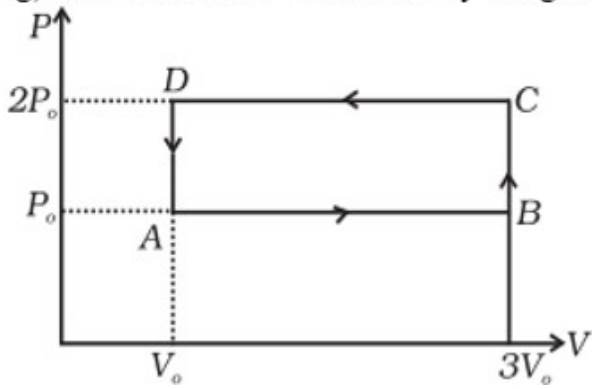
Options :

1. ✖ **6Po Vo**

2. ✔ –2 Po Vo

3. ✖ + 2 Po Vo

4. ✖ +4 Po Vo

Question Number : 18 Question Id : 698138668 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An ideal gas undergoes isothermal process from some initial state i to final state f. Choose the correct alternatives.

Options :

1. ✔ dU = 0

2. ✖ dQ= 0

3. ✖ $dQ = dU$

4. ✖ $dQ < dW$

Question Number : 19 Question Id : 698138669 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

At what temperature the rms velocity of a gas is half of its value at 0^0c, pressure remains constant.

Options :

1. ✖ 410^0c

2. ✔ -204.75^0c

3. ✖ -410^0c

4. ✖ 204.75^0c

Question Number : 20 Question Id : 698138670 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The time period of a simple pendulum inside the satellite orbiting earth is

Options :

1. ✖ *Zero*

2. ✔ *Infinite*

3. ✖ *T*

4. ✖ *T/2*

Question Number : 21 Question Id : 698138671 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If a simple pendulum oscillates with an amplitude of 50 mm and time period of 2s, its maximum velocity is

Options :

1. ✖ 0.10 m/s

2. ✔ 0.15 m/s

3. ✖ 0.8 m/s

4. ✖ 0.26 m/s

Question Number : 22 Question Id : 698138672 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

What are the number of nodes and antinodes when a sonometer is vibrating in its 3rd overtone?

Options :

1. ✖ 4,3

2. ✖ 3,4

3. ✖ 4,5

4. ✔ 5,4

Question Number : 23 Question Id : 698138673 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Two perfectly identical wires are in unison. If tension in one wire is increased by 1% then on sounding them together, three beats are produced in 2sec. Calculate the frequency of each wire.

Options :

1. ✖ **400 Hz**

2. ✖ **450 Hz**

3. ✖ **350 Hz**

4. ✔ **300 Hz**

Question Number : 24 Question Id : 698138674 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Two conducting spheres A and B of radii a & b respectively are at the same potential. The ratio of surface charge densities of A and B is

Options :

1. ✔ b/a

2. ✘ a/b

3. ✘ a^2/b^2

4. ✘ b^2/a^2

Question Number : 25 Question Id : 698138675 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

What is the flux through the cube of side 'a' if a point charge of q is at one corner?

Options :

1. ✖ $2q/\varepsilon_0$

2. ✔ $q/8\,\varepsilon_0$

3. ✖ $q/\,\varepsilon_0$

4. ✖ $q\,6a^2/\,\varepsilon_0$

Question Number : 26 Question Id : 698138676 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Three capacitors of capacitances 1µf, 2µF & 3µF are connected in series and a potential difference of 11V is applied across the combination, then the potential difference across the plates of 1µF capacitor is

Options :

1. ✖ **2V**

2. ✖ **1V**

3. ✖ **4V**

4. ✔ **6V**

Question Number : 27 Question Id : 698138677 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

For a cell, the terminal potential difference is 3.6 V, when the circuit is open. If the potential difference reduces to 3 V, when cell is connected to a resistance of 5 Ω, the internal resistance of cell is
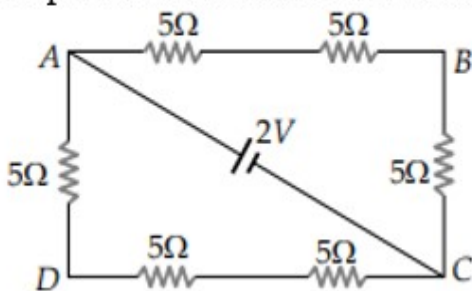
Options :

1. ✔ 1Ω

2. ✖ 2Ω

3. ✖ 4Ω

4. ✖ 8Ω

Question Number : 28 Question Id : 698138678 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The potential difference between points A and B of adjoining figure is

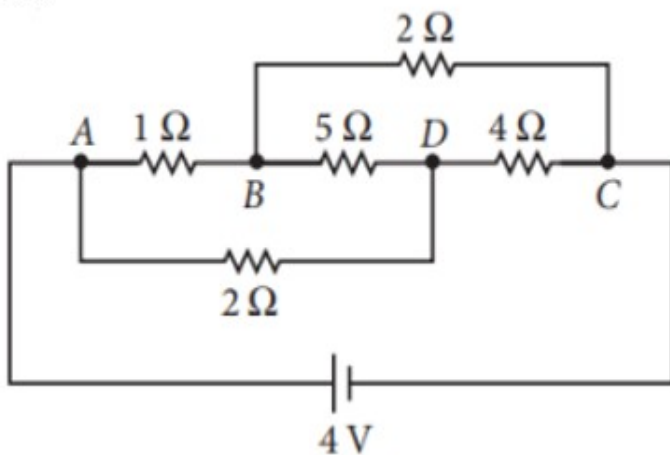**Options :**

1. ✖ 2/3V

2. ✖ 8/9 V

3. ✔ 4/3 V

4. ✖ **2V**

Question Number : 29 Question Id : 698138679 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The current drawn from the battery by the network of resistors shown in the figure

Options :

1. ✖ **1A**

2. ✔ **2A**

3. ✖ **3A**

4. ✖ 0.5A

Question Number : 30 Question Id : 698138680 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A Two wires of same length are shaped into a square and a circle if they carry same current, ratio of magnetic moment is

Options :

1. ✖ $2 : \pi$

2. ✖ $\pi : 2$

3. ✖ $4 : \pi$

4. ✔ $\pi : 4$

Question Number : 31 Question Id : 698138681 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A current loop placed in a non-uniform magnetic field experiences

Options :

1. ✖ **a force of repulsion**

2. ✖ **a force of attraction**

3. ✖ **a torque but not force**

4. ✔ **a force and a torque**

Question Number : 32 Question Id : 698138682 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

According to Ampere's Circuital Law, what is the relationship between the current passing through a closed loop and the magnetic field produced?

Options :

1. ✔ **Directly proportional**

2. ✖ **Inversely proportional**

3. ✖ **No relationship**

4. ✖ **Exponential relationship**

Question Number : 33 Question Id : 698138683 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The domain formation is a necessary feature of

Options :

1. ✖ *diamagnetism*

2. ✖ *paramagnetism*

3. ✔ *ferromagnetism*

4. ✖ *all of these*

Question Number : 34 Question Id : 698138684 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The energy stored in coil carrying current I is U. If current is halved, then energy stored in the coil will be

Options :

1. ✖ U/2

2. ✔ U/4

3. ✖ 2U

4. ✖ 4U

Question Number : 35 Question Id : 698138685 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Statement I: A solenoid's self-inductance can be increased by inserting a soft iron core.
Statement II: An iron core increases the flux density of a solenoid, and so increases its flux linkage when a current flows.
Which of the following is correct?

Options :

1. ✖ Statement-I is true,
Statement-II is
true; Statement-II
is NOT a correct
explanation for
Statement-I

2. ✔ Statement-I is
true, Statement-II
is true; Statement-
II is correct
explanation for
Statement-I.

3. ✖ Statement-I is
true, Statement-II
is false

4. ✖ Statement-I is
false, Statement-
II is true

Question Number : 36 Question Id : 698138686 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a circuit containing a resistor, capacitor, and inductor in series, if the frequency of the alternating current is such that the capacitive and inductive reactance's are equal, what is the net impedance?

Options :

1. ✔ **Minimum**

2. ✖ **Maximum**

3. ✖ **zero**

4. ✖ **infinity**

Question Number : 37 Question Id : 698138687 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a transformer, if the primary coil is connected to an AC source, what happens to the induced electromotive force (EMF) in the secondary coil when the number of turns in the secondary coil is increased?

Options :

1. ✔ **increases**

2. ✖ **decreases**

3. ✖ **remains the same**

4. ✖ **depends on the frequency of the AC source**

Question Number : 38 Question Id : 698138688 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If λ_x, λ_m, λ_v represents wavelength of X-Rays, microwaves & visible rays then

Options :

1. ✖ $\lambda_m > \lambda_x > \lambda_v$

2. ✓ $\lambda m > \lambda v > \lambda_x$

3. ✗ $\lambda v > \lambda x > \lambda_m$

4. ✗ $\lambda v > \lambda m > \lambda_x$

Question Number : 39 Question Id : 698138689 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following are not electromagnetic waves?

Options :

1. ✗ ultra violet-rays

2. ✓ cosmic-rays

3. ✗ x-rays

4. ✗ gamma-rays

Question Number : 40 Question Id : 698138690 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A small telescope has an objective lens of focal length 144cm and eyepiece of focal length 6cm. What is the magnifying power of telescope? What is separation between objective & eyepiece in normal adjustment?

Options :

1. ✖ 26,144cm
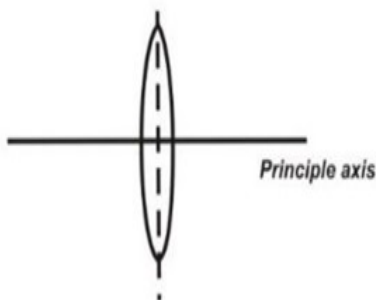
2. ✔ 24,150cm

3. ✖ 30,144cm

4. ✖ 24,144cm

Question Number : 41 Question Id : 698138691 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An equiconvex lens of focal length 15 cm is cut into two halves as shown in figure (along the dotted line). Find the focal length of each part?

Principle axis

Options :

1. ✖ -30cm

2. ✖ -20cm

3. ✔ 30cm

4. ✖ -15cm

Question Number : 42 Question Id : 698138692 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In the phenomena of Diffraction of light when the violet light is used instead of red light then,

Options :

1. ✖ **Fringe width increases**

2. ✖ **No change in fringe width**

3. ✔ **Fringe width decreases**

4. ✖ **Color pattern is formed**

Question Number : 43 Question Id : 698138693 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A light wave enters from air into glass. How will the frequency of the wave be affected?

Options :

1. ✳ **Increases**

2. ✔ **Remains unchanged**

3. ✳ **Decreases**

4. ✳ **Insignificant**

Question Number : 44 Question Id : 698138694 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In the context of wave interference, what happens when two waves of equal amplitude and opposite phase meet?

Options :

1. ✳ **Constructive interference**

2. ✳ **Standing waves are formed**

3. ✔ **Destructive interference**

4. ✳ **No interference occurs**

Question Number : 45 Question Id : 698138695 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The threshold wavelength for a metal having work function ϕ_0 is λ_0, what is the threshold wavelength for a metal whose work function is $\phi_0/4$.

Options :

1. ✔ $4\lambda_0$

2. ✘ $2\lambda_0$

3. ✘ $\lambda_0/2$

4. ✘ $\lambda_0/4$

Question Number : 46 Question Id : 698138696 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

What is de-broglie wavelength associated with an electron moving with the speed of $5.4 \times 10^6 m/s$.

Options :

1. ✘ 0.236 nm

2. ✘ 0.489 nm

3. ✘ 0.123 nm

4. ✔ 0.135 nm

Question Number : 47 Question Id : 698138697 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The ground state energy of Hydrogen atom is -13.6 eV. What is the KE of an electron in the 3rd excited state?

Options :

1. ✖ -3.4eV

2. ✖ -1.51eV

3. ✔ -0.85eV

4. ✖ **0eV**

Question Number : 48 Question Id : 698138698 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Assertion – Thermonuclear fusion reactions may become the source of unlimited power for the mankind.
Reason – A single fusion event involving isotopes of Hydrogen produces more energy than energy from nuclear fission of $_{93}U^{235}$

Options :

1. ✖ **Assertion is correct but Reason is incorrect**

2. ✖ **Both Assertion and Reason are incorrect**

3. ✔ **Both Assertion and Reason are correct and Reason is correct explanation of Assertion**

4. ✱ **Both Assertion and Reason are correct and Reason is not the correct explanation of Assertion**

Question Number : 49 Question Id : 698138699 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following has maximum stopping potential (magnitude) when metal is illuminated by visible light?

Options :

1. ✱ **Blue**

2. ✱ **Yellow**

3. ✔ **Violet**

4. ✱ **Red**

Question Number : 50 Question Id : 698138700 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In half-wave rectification, what is the output frequency if the input frequency is 50Hz. What is output frequency of a full wave rectifier for same input frequency?

Options :

1. ✱ 25 Hz, 50 Hz

2. ✔ 50 Hz, 100 Hz

3. ✖ 100 Hz, 50 Hz

4. ✖ 200 Hz, 100 Hz

Chemistry

Section Id :	69813817
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	69813817
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 698138701 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

One mole of any substance contains 6.022×10^{23} atoms/molecule. Number of molecules of H_2SO_4 present in 100 mL of 0.02M H_2SO_4 solution is

Options :

1. ✔ 12.044×10^{20} molecules

2. ✘ 6.022×10^{23} molecules

3. ✘ 1×10^{23} molecules

4. ✘ 12.044×10^{23} molecules

Question Number : 52 Question Id : 698138702 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The organic compound contains carbon, hydrogen and oxygen. Its elemental analysis gave, C- 38.71% and H-9.67%. The empirical formula of the compound would be

Options :

1. ✘ CHO

2. ✘ CH_2O

3. ✔ CH_3O

4. ✘ CH_4O

Question Number : 53 Question Id : 698138703 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In the ground state, an element has 13 electrons in its M-shell. The element is

Options :

1. ✔ **Mn**

2. ✖ **Cr**

3. ✖ **Ni**

4. ✖ **Fe**

Question Number : 54 Question Id : 698138704 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following is not permissible?

Options :

1. ✖ $n=4, l=3, m=0$

2. ✖ $n=4, l=2, m=1$

3. ✔ $n=4, l=4, m=1$

4. ✗ n=4, l=0, m=0

Question Number : 55 Question Id : 698138705 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

According to Bohr Theory, which of the following transitions in the hydrogen atom will give rise to the least energetic photon? Use the equation: $E_n = (-2.18 \times 10^{-18} \text{ J}) (1/n^2)$

Options :

1. ✗ $n = 5$ to $n = 3$

2. ✗ $n = 6$ to $n = 1$

3. ✗ $n = 4$ to $n = 3$

4. ✓ $n = 6$ to $n = 5$

Question Number : 56 Question Id : 698138706 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The highest negative electron gain enthalpy among the following is

Options :

1. ✓ **Chlorine**

2. ✳ **Bromine**

3. ✳ **Iodine**

4. ✳ **Fluorine**

Question Number : 57 Question Id : 698138707 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The elements with atomic numbers 35, 53 and 85 are all

Options :

1. ✳ **Noble gases**

2. ✔ **Halogens**

3. ✳ **Heavy metals**

4. ✳ **Light metals**

Question Number : 58 Question Id : 698138708 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Hybridisation states of C in CH_3^+ and CH_4 are

Options :

1. ✳ $sp^2 \;\&\; sp^2$

2. ✳ $sp^3 \;\&\; sp^2$

3. ✓ sp^2 & sp^3

4. ✗ sp^3 & sp^3

Question Number : 59 Question Id : 698138709 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The unit of Ebullioscopic constant is

Options :

1. ✗ $K\ kg^{-1}\ mol^{-1}$

2. ✗ $Kg\ K^{-1}\ mol^{-1}$

3. ✗ $K\ mol\ kg^{-1}$

4. ✓ $K\ kg\ mol^{-1}$

Question Number : 60 Question Id : 698138710 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Use VSEPR theory to predict the ideal bond angles around the two carbon atoms in acetaldehyde, CH_3CHO. (The first carbon has single bonds to three H atoms and one C atom; the second carbon has single bonds to C and H, and a double bond to O)

Options :

1. ✖ 109°, 105°

2. ✔ 109°, 120°

3. ✖ 120°, 109°

4. ✖ 109°, 104°

Question Number : 61 Question Id : 698138711 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Based on lattice energy and other considerations, which one of the following alkali metal chlorides is expected to have highest melting point?

Options :

1. ✖ **LiCl**

2. ✔ **NaCl**

3. ✖ **KCl**

4. ✖ **RbCl**

Question Number : 62 Question Id : 698138712 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

What is the amount of heat necessary to raise the temperature of 8.5 kg of water from 12.5 °C to 84 °C?

Options :

1. ✖ 3.0×10^3 kJ

2. ✖ 36 J

3. ✔ 2.5×10^3 kJ

4. ✖ 2.5×10^6 kJ

Question Number : 63 Question Id : 698138713 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Data: $2Ba(s) + O_2(g) \rightarrow 2BaO(s)$ $\Delta H° = -1107.0$ kJ
$Ba(s) + CO_2(g) + \frac{1}{2}O_2(g) \rightarrow BaCO_3(s)$ $\Delta H° = -822.5$ kJ
Given the data above, calculate $\Delta H°$ for the reaction below.
Reaction: $BaCO_3(s) \rightarrow BaO(s) + CO_2(g)$

Options :

1. ✖

-1929.5 kJ

2. ✖ -1376.0 kJ

3. ✖ -284.5 kJ

4. ✔ 269.0 kJ

Question Number : 64 Question Id : 698138714 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Predict the signs of $\Delta H°$, $\Delta S°$, and $\Delta G°$ for the vaporization of liquid water at 150°C.

Options :

1. ✖ $\Delta H° > 0$, $\Delta S° > 0$, $\Delta G° > 0$

2. ✖ $\Delta H° < 0$, $\Delta S° < 0$, $\Delta G° < 0$

3. ✖ $\Delta H° > 0$, $\Delta S° < 0$, $\Delta G° > 0$

4. ✔ $\Delta H° > 0$, $\Delta S° > 0$, $\Delta G° < 0$

Question Number : 65 Question Id : 698138715 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$N_2O_4 \rightleftharpoons 2NO_2$. In this reaction the dissociation of N_2O_4 at equilibrium is x and then how much mole will be of N_2O_4 and NO_2 at equilibrium

Options :

1. ✖ $(1-x)^2$

2. ✖ **1**

3. ✔ $1+x$

4. ✖ **2**

Question Number : 66 Question Id : 698138716 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The P^H of a 10^{-8} solution of HCl in water is

Options :

1. ✖ 8

2. ✖ -8

3. ✖ **Between 7 and 8**

4. ✔ **Between 6 and 7**

Question Number : 67 Question Id : 698138717 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Solubility product constants (K_{sp}) of salts of types MX, MX_2 and M_3X at temperature T are 4.0×10^{-8}, 3.2×10^{-4} and 2.7×10^{-15} respectively. Solubility $(mol\,dm^{-3})$ of the salts at temperature T are in the order

Options :

1. ✖ $MX > MX_2 > M_3X$

2. ✖ $M_3X > MX_2 > MX$

3. ✖ $MX_2 > M_3X > MX$

4. ✔ $MX \gg M_3X > MX_2$

Question Number : 68 Question Id : 698138718 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following statement(s) is/are correct?

(i) Oxidation state of Iron in Fe_3O_4 is (3/4).

(ii) Electrons are never shared in fraction.

Options :

1. ✖ (i) and (ii)

2. ✖ Only (i)

3. ✔ Only (ii)

4. ✖ Neither (i) nor (ii)

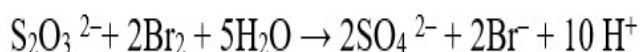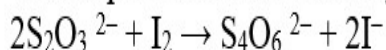**Question Number : 69 Question Id : 698138719 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Thiosulphate reacts differently with iodine and bromine in the reactions given below:

$2S_2O_3{}^{2-} + I_2 \rightarrow S_4O_6{}^{2-} + 2I^-$

$S_2O_3{}^{2-} + 2Br_2 + 5H_2O \rightarrow 2SO_4{}^{2-} + 2Br^- + 10\,H^+$

Which of the following statements justifies the above dual behaviour of thiosulphate?

Options :

1. ✔ **Bromine is a stronger oxidant than iodine.**

2. ✖ **Bromine is a weaker oxidant than iodine.**

3. ✖ **Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions.**

4. ✱ **Bromine undergoes oxidation and iodine undergoes reduction in these reactions.**

Question Number : 70 Question Id : 698138720 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Identify the compound that exhibits tautomerism

Options :

1. ✱ **Lactic acid**

2. ✔ 2-Pentanone

3. ✱ **Phenol**

    2-Butene
4. ✱

Question Number : 71 Question Id : 698138721 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In which of the following, resonance of –NH$_2$ group is possible?

Options :

1. ✱ 1-Aminobutane

2. ✱ **Ethylamine**

3. ✱ **Benzylamine**

4. ✔ **p-Toluidine**

Question Number : 72 Question Id : 698138722 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Ozonolysis of an organic compound gives formaldehyde as one of the products. This confirms the presence of

Options :

1. ✔ **Vinyl group**

2. ✖ **An isopropyl group**

3. ✖ **An acetylene triple bond**

4. ✖ **Two ethyl groups**

Question Number : 73 Question Id : 698138723 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Calcium carbide when treated with water gives

Options :

1. ✖ **ethylene**

2. ✖ **methane**

3. ✔ **acetylene**

4. ✖ **ethane**

Question Number : 74 Question Id : 698138724 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A 5% solution of cane sugar (Molecular mass = 342 u) is isotonic with 1% of substance X. The molecular mass of X is

Options :

1. ✖ 34.2

2. ✖ 171.2

3. ✔ 68.4

4. ✖ 136.8

Question Number : 75 Question Id : 698138725 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A 6% solution of urea is isotonic with

Options :

1.

0.05 M solution of
✖ glucose

2. ✖ 6% solution of glucose

25% solution of
3. ✖ glucose

1 M solution of
4. ✔ glucose

Question Number : 76 Question Id : 698138726 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The standard emf of the cell involving one electron change is found to be 0.591V at 25^0C.The equilibrium constant of the reaction is

Options :

1. ✖ 10

2. ✖ 10^5

3. ✖ 10^{30}

4. ✔ 10^{10}

Question Number : 77 Question Id : 698138727 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The increase in the value of molar conductivity of acetic acid with dilution is due to

Options :

1. ✖ **Decrease in inter ionic forces**

2. ✖ **Increase in self ionization of water**

3. ✔ **Increase in its degree of ionisation**

4. ✖ **Increase of solvation**

Question Number : 78 Question Id : 698138728 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following statements is incorrect?

Options :

1. ✔ In an electrolytic cell, reduction occurs at the anode.

2. ✖

Aluminium metal would form at the cathode during the electrolysis of molten $AlBr_3$

3. ✖ The cathode is labelled "+" in a voltaic cell

4. ✖ Oxidation occurs at the anode in a voltaic cell

Question Number : 79 Question Id : 698138729 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The charge required for reduction of one mole of MnO_4^- to MnO_2 ion is

Options :

1. ✖ **1F**

2. ✔ **3F**

3. ✖ **5F**

4. ✖ **6F**

Question Number : 80 Question Id : 698138730 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The time taken for 90% of a first order reaction to complete is approximately

Options :

1. ✖ 1.1 times that of half life

2. ✖ 2.2 times that of half life

3. ✔ 3.3 times that of half life

4. ✖ 4.4 times that of half life

Question Number : 81 Question Id : 698138731 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Consider the reaction A → products. Which of the following plots is consistent with a zero-order reaction?

Options :

1. ✖ [A] plotted against time gives a horizontal, straight line.

2. ✗

1/[A] plotted against time gives a straight line of negative slope.

3. ✗

1/[A] plotted against time gives a straight line of positive slope.

4. ✓

[A] plotted against time gives a straight line of negative slope.

Question Number : 82 Question Id : 698138732 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

For a first order reaction $A \rightarrow B$ the reaction rate at reactant concentration of 0.01M is found to be 2.0×10^{-5} mol $L^{-1}S^{-1}$. The half-life period of the reaction is

Options :

1. ✗ **30s**

2. ✗ **220s**

3. ✗ **300s**

4. ✓ **347s**

Question Number : 83 Question Id : 698138733 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which is not the correct statement about the chemistry of 3d and 4f series?

Options :

1. ✖ 3d element show more oxidation states than 4f series elements

2. ✖ The energy difference between 3d and 4s-orbitals is very small

3. ✖ Eu (II) is more stable than Ce (II)

4. ✔ The paramagnetic character in 3d elements increases from Sc to Cu

Question Number : 84 Question Id : 698138734 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following pairs has the same size?

Options :

1. ✖ Fe^{2+}, Ni^{2+}

2. ✖ Zr^{4+}, Ti^{4+}

3. ✔ Zr^{4+}, Hf^{4+}

4. ✖ Zn^{2+}, Hf^{4+}

Question Number : 85 Question Id : 698138735 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Nickel (Z=28) combines with a uninegativemonodate ligand X to form a paramagnetic complex $[NiX_4]^{2-}$.

The number of unpaired electrons in the nickel atom and the geometry of the complex are respectively.

Options :

1. ✖ One, tetrahedral

2. ✔ Two, tetrahedral

One, square planar

3. ✖

Two, square
   planar

4. ✖

Question Number : 86 Question Id : 698138736 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The coordination number and the oxidation state of the element E in the complex. $[E(en)_2(C_2O_4)]NO_2$ are respectively

Options :

1. ✔ **6 and 3**

2. ✖ **6 and 2**

3. ✖ **4 and 2**

4. ✖ **4 and 3**

Question Number : 87 Question Id : 698138737 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Chloromethane on treatment with excess of ammonia yields mainly

Options :

1. ✖ N, N-
dimethylmethanamine
$(CH_3-N(CH_3)_2)$

2. ✖ N–methylmethanamine
$(CH_3—NH—CH_3)$

3. ✖ Methanamine
(CH_3NH_2)

4. ✔ Mixture containing all
these compounds

Question Number : 88 Question Id : 698138738 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

C – Cl bond of chlorobenzene in comparison to C – Cl bond in methyl chloride is

Options :

1. ✖ **Longer and weaker**

2. ✖ **Shorter and weaker**

3. ✔ **Shorter and stronger**
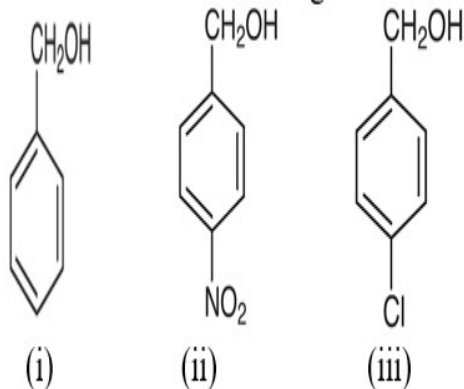
4. ✖ **Longer and stronger**

Question Number : 89 Question Id : 698138739 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Mark the correct increasing order of reactivity of the following compounds with HBr/HCl.

Options :

1. ✖   i <ii < iii

2. ✖   ii < i< iii

3. ✔   ii < iii < i

4. ✖   iii< ii < i

Question Number : 90 Question Id : 698138740 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which has the highest value of p_{ka}?

Options :

1. ✖ **Phenol**

2. ✔ **Ethanol**

3. ✖ o-Nitrophenol

4. ✖ o-Cresol

Question Number : 91 Question Id : 698138741 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
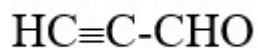
Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A compound possessing α-hydrogen atom, in the presence of dilute alkali forms β-hydroxy aldehyde. This product on heating with dilute acid forms an unsaturated crotonaldehyde. The compound is

Options :

1. ✔ CH_3CHO

2. ✖ CH_3CH_2CHO

3. ✖ $CH_2=CH-CHO$

4. ✖ HC≡C-CHO

Question Number : 92 Question Id : 698138742 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
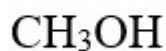
Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An organic compound X on treatment with acidified $K_2Cr_2O_7$ gives compound Y which reacts with I_2 and sodium carbonate to form Triiodomethane. The compound X can be

Options :

1. ✖ CH_3OH

2. ✖ $(CH_3)_2CO$

3. ✖ CH_3CHO

4. ✔ $CH_3CH(OH)CH_3$

Question Number : 93 Question Id : 698138743 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0
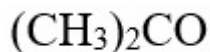
Question Label : Multiple Choice Question

Compound PhOCOPh can be prepared by the reaction of _____.

Options :

1. ✖ Phenol and benzoic acid in the presence of NaOH

2. ✔ **Phenol and benzoyl chloride in the presence of pyridine**

3. ✖ Phenol and benzoyl chloride in the presence of ZnCl$_2$
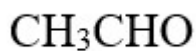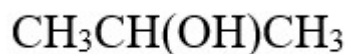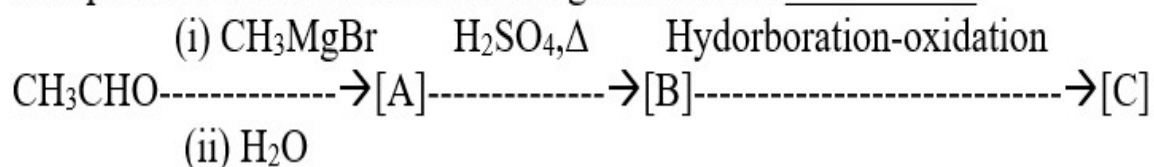
4. ✖ **Phenol and benzaldehyde in the presence of palladium**

Question Number : 94 Question Id : 698138744 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Compounds A and C in the following reaction are _____.

$$CH_3CHO \xrightarrow[\text{(ii) } H_2O]{\text{(i) } CH_3MgBr} [A] \xrightarrow{H_2SO_4, \Delta} [B] \xrightarrow{\text{Hydorboration-oxidation}} [C]$$

Options :

1. ✖ **Identical**

2. ✔ **Positional isomers**

3. ✖ **Functional isomers**

4. ✺ **Optical isomers**

Question Number : 95 Question Id : 698138745 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following amines can be prepared by Gabriel method?
(i) $CH_3CH_2NH_2$ (ii) $(CH_3)_2CHNH_2$ (iii) $(CH_3)_3CNH_2$ (iv) $C_6H_5NH_2$

Options :

1. ✺ (i) and (iii)

2. ✺ (ii) and (iv)

3. ✔ (i), (ii) and (iii)

4. ✺ (i) and (ii)

Question Number : 96 Question Id : 698138746 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In the reaction, RNH_2 + HNO_2 $\rightarrow$ $ROH + H_2O + A$; here gas A is

Options :

1. ✗ NH_3

2. ✗ O_2

3. ✓ N_2

4. ✗ CO_2

Question Number : 97 Question Id : 698138747 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following is the most preferred reagent for reducing nitroethane to ethylamine?

Options :

1. ✗ H_2/Pt

2. ✗ Sn/HCl

3. ✓ Fe/HCl

4. ✗ Zn/HCl

Question Number : 98 Question Id : 698138748 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Gum is a

Options :

1. ✖ **Monosaccharide**

2. ✖ **Disaccharide**

3. ✖ **Trisaccharide**

4. ✔ **Polysaccharide**

Question Number : 99 Question Id : 698138749 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following is false?

Options :

1. ✔ **Casein of milk is a simple protein**

2. ✖ **In glycoproteins the prosthetic group is a carbohydrate**

3. ✖ **Proteins on hydrolysis yield a mixture of amino acids**

4. ✖ **Proteins are polymers with high molecular mass**

Question Number : 100 Question Id : 698138750 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The standard enthalpies of combustion of $C_6H_{6(1)}$, $C_{(graphite)}$ and $H_{2(g)}$ are respectively -3270 KJmol^{-1}, -394 KJmol^{-1} and -286 KJmol^{-1}. What is the standard enthalpy of formation of $C_6H_{6(1)}$ in KJmol^{-1}?

Options :

1. ✖ -48

2. ✔ +48

3. ✖ -480

4. ✖ +480

Mathematics

Section Id :	69813818
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes

Question Number : 101 Question Id : 698138751 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If R is the set of real numbers and Q is the set of rational numbers, then what is R-Q?

Options :

1. ✖ **Set of rational numbers**

2. ✖ **Set of real numbers**

3. ✔ **Set of irrational numbers**

4. ✖ **Set of Integers**

Question Number : 102 Question Id : 698138752 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let $f : R \rightarrow R$, $f(x) = (3 - x^3)^{1/3}$, then f^{-1} is

Options :

1. ✖ **2f**

2. ✔ **f**

3. ✖ $\dfrac{1}{f}$

4. ✖ $\dfrac{1}{2f}$

Question Number : 103 Question Id : 698138753 Question Type : MCQ Option Shuffling : No Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $[x]^2 - 5[x] + 6 = 0$. where $[.]$ denote the greatest integer function, then

Options :

1. ✖ $x \in [3, 4)$

2. ✖ $x \in (2, 3)$

3. ✖ $x \in [2, 3]$

4. ✔ $x \in [2, 4)$

Question Number : 104 Question Id : 698138754 Question Type : MCQ Option Shuffling : No Is
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum
Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let A= {1,2,3}, then the number of reflexive relations on A is

Options :

1. ✳ **29**

2. ✳ **27**

3. ✔ **64**

4. ✳ **9**

Question Number : 105 Question Id : 698138755 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The coefficient of x^{15} in the expansion of $(2x^{12} - \frac{3}{x^3})^5$ is

Options :

1. ✳ -1072

2. ✔ -1080

3. ✳ -1075

4. ✳ -1060

Question Number : 106 Question Id : 698138756 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The point at which the maximum value of x+y, subject to the constraints $x+2y \leq 70$, $2x+y \leq 95$, $x,y \geq 0$ is obtained by

Options :

1. ✖ (30,25)

2. ✖ (20,35)

3. ✖ (35,20)

4. ✔ (40,15)

Question Number : 107 Question Id : 698138757 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The sum of integers from 1 to 100 that are divisible by 2 or 5 is

Options :

1. ✖ **3000**

2. ✔ **3050**

3. ✖ **3600**

4. ✖ **3250**

Question Number : 108 Question Id : 698138758 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The total number of 9 digit numbers which have all different digits is

Options :

1. ✖ $10!$

2. ✖ $9!$

3. ✔ $9 \times 9!$

4. ✖ $9 \times 10!$

Question Number : 109 Question Id : 698138759 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

How many 4 letter words can be formed using the letters of the word 'PROPORTION'

Options :

1. ✔ **758**

2. ✖ **760**

3. ✖ **762**

4. ✖ **754**

Question Number : 110 Question Id : 698138760 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If A.M and G.M of two positive numbers are 10 and 8 respectively then the two numbers are

Options :

1. ✔ **4 and 16**

2. ✖ **2 and 8**

3. ✖ **3 and 12**

4. ✖ **5 and 10**

Question Number : 111 Question Id : 698138761 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The multiplicative inverse of the complex number $Z = 3+2i$ is

Options :

1. ✖ $\dfrac{3}{14} + \dfrac{5}{14}i$

2. ✔ $\dfrac{3}{13} - \dfrac{2}{13}i$

3. ✘ $\dfrac{3}{13} + \dfrac{5}{13}i$

4. ✘ $\dfrac{3}{13} - \dfrac{5}{13}i$

Question Number : 112 Question Id : 698138762 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Determine x and y, if $\begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 \\ 11 \end{bmatrix}$

Options :

1. ✘ x =4 , y =8

2. ✘ x = 3, y = -4

3. ✔ x = 5, y = 3

4. ✘ x = 2, y = 6

Question Number : 113 Question Id : 698138763 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Total number of possible matrices of order 3x3 with each entry is 0 or 1 or (-1) is

Options :

1. ✔ 19,683

2. ✖ 19,863

3. ✖ 2,683

4. ✖ 29,683

Question Number : 114 Question Id : 698138764 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If A is a square matrix such that $A^2 = I$, then $(A–I)^3 + (A + I)^3 –7A$ is equal to

Options :

1. ✔ **A**

2. ✖ $I – A$

3. ✖ $I + A$

4. ✖ **3**

Question Number : 115 Question Id : 698138765 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the matrix $A = \begin{bmatrix} 0 & a & -3 \\ 2 & 0 & -1 \\ b & 1 & 0 \end{bmatrix}$ is skew-symmetric, then the values of 'a' and 'b' are

Options :

1. ✖ $2, 3$

2. ✖ $-2, -3$

3. ✔ $-2, 3$

4. ✖ $2, -3$

Question Number : 116 Question Id : 698138766 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Determine the unit vector perpendicular to each of the vectors $\bar{a} + \bar{b}$ and $\bar{a} - \bar{b}$, Where $\bar{a} = 3\hat{\imath} + 2\hat{\jmath} + 2\hat{k}$ and $\bar{b} = \hat{\imath} + 2\hat{\jmath} - 2\hat{k}$ is

Options :

1. ✖ $\frac{4}{3}\hat{\imath} - \frac{2}{3}\hat{\jmath} - \frac{5}{3}\hat{k}$

2. ✔ $\frac{2}{3}\hat{\imath} - \frac{2}{3}\hat{\jmath} - \frac{1}{3}\hat{k}$

3. ✖ $\frac{5}{3}\hat{\imath} - \frac{4}{3}\hat{\jmath} - \frac{2}{3}\hat{k}$

4. ✖ $\frac{7}{3}\hat{\imath} - \frac{5}{3}\hat{\jmath} + \frac{8}{3}\hat{k}$

Question Number : 117 Question Id : 698138767 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The area of the parallelogram whose diagonals are given by $2\hat{i} - \hat{j} + \hat{k}$ and $\hat{i} + 3\hat{j} - \hat{k}$ is

Options :

1. ✖ $\frac{3}{2}\sqrt{62}$ sq.units

2. ✔ $\frac{1}{2}\sqrt{62}$ sq.units

3. ✖

$$\frac{3}{2}\sqrt{2} \ \text{sq.units}$$

$$\frac{5}{2}\sqrt{62} \ \text{sq.units}$$

4. ✖

Question Number : 118 Question Id : 698138768 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$If \ \cos^{-1} x + \cos^{-1} y + \cos^{-1} z = 3\pi \ then \ the \ value \ of \ x^2 + y^2 - z^2 \ is$

Options :

1. ✖ **0**

2. ✔ **1**

3. ✖ **3**

4. ✖ -3

Question Number : 119 Question Id : 698138769 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $tan^{-1}[2\sin(2cos^{-1}\frac{\sqrt{3}}{2})]$ is

Options :

1. ✖ $\dfrac{\pi}{6}$

2. ✖ $\dfrac{\pi}{4}$

3. ✔ $\dfrac{\pi}{3}$

4. ✖ $\dfrac{\pi}{2}$

Question Number : 120 Question Id : 698138770 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $\sin^{-1}\left(\dfrac{x}{5}\right) + \csc^{-1}\left(\dfrac{5}{4}\right) = \dfrac{\pi}{2}$, then x is

Options :

1. ✔ **3**

2. ✖ **4**

3. ✖ **-3**

4. ✖ **2**

Question Number : 121 Question Id : 698138771 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\sqrt{3} \ Cosec \ 20° - Sec \ 20° \ is$

Options :

1. ✖ **3**

2. ✔ **4**

3. ✖ **2**

4. ✖ **0**

Question Number : 122 Question Id : 698138772 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of λ for which the lines

$$\frac{x-3}{-3} = \frac{y+2}{2\lambda} = \frac{z+4}{2}$$

and

$$\frac{x+1}{3\lambda} = \frac{y-2}{1} = \frac{z+6}{-5}$$

are Perpendicular to each other is

Options :

1. ✖ $\dfrac{20}{7}$

2. ✗ $\dfrac{40}{7}$

3. ✗ $\dfrac{-30}{7}$

4. ✓ $\dfrac{-10}{7}$

Question Number : 123 Question Id : 698138773 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The reflection of the point (4, – 13) about the line 5x + y + 6 = 0 is

Options :

1. ✓ $(-1, -14)$

2. ✗ $(3, 4)$

3. ✗ $(0, 0)$

4. ✗ $(1, 2)$

Question Number : 124 Question Id : 698138774 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the line $\dfrac{x-3}{2} = \dfrac{y+2}{-1} = \dfrac{z+4}{3}$ lies in the plane $lx + my - z = 9$, then the value of $l^2 + m^2$ is

Options :

1. ✖ **3**

2. ✖ **1**

3. ✖ **0**

4. ✔ **2**

Question Number : 125 Question Id : 698138775 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$\text{limit}_{X \to 0} \dfrac{Cosec\, x - Cot\, x}{x}$ is equal

Options :

1. ✖ $\dfrac{-1}{2}$

2. ✖ **I**

3. ✔ $\dfrac{1}{2}$

4. ✖ **1**

Question Number : 126 Question Id : 698138776 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$\text{limit}_{X \to 2} \ \frac{x^3 - 4x^2 + 4x}{x^2 - 4}$ is

Options :

1. ✖ **2**

2. ✖ **4**

3. ✖ **3**

4. ✔ **0**

Question Number : 127 Question Id : 698138777 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let $f(x) = |x - 1| + |x + 2|$. Then f(x) is

Options :

1. ✖ Continuous in R and differentiable in R except at x=-1 and x=2

2. ✖ Continuous in R and differentiable in R except at x = -1 and x=-2

3. ✖ Continuous in R and differentiable in R except at x=1 and x=2

4. ✔ Continuous in R and differentiable in R except at x=1 and x= -2

Question Number : 128 Question Id : 698138778 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $2^x - 2^y = 2^{x+y}$, then $\frac{dy}{dx}$ is

Options :

1. ✔ 2^{y-x}

2. ✖ $2^{y/x}$

3. ✖ -2^{y-x}

4. ✖ $2^{x/y}$

Question Number : 129 Question Id : 698138779 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $y = \dfrac{1+\frac{1}{x^2}}{1-\frac{1}{x^2}}$,then $\dfrac{dy}{dx}$ is equal to

Options :

1. ✔ $\dfrac{-4x}{(x^2-1)^2}$

2. ✘ $\dfrac{-4x}{x^2-1}$

3. ✘ $\dfrac{1-x^2}{4x}$

4. ✘ $\dfrac{4x}{x^2-1}$

Question Number : 130 Question Id : 698138780 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $y = \cos^{-1}\left(\dfrac{sinx+cosx}{\sqrt{2}}\right),\ -\dfrac{\pi}{4} < x < \dfrac{\pi}{4}$ then $\dfrac{dy}{dx}$ is

Options :

1. ✔ -1

2. ✖ 1

3. ✖ $\dfrac{1}{2}$

4. ✖ $\dfrac{1}{\sqrt{2}}$

Question Number : 131 Question Id : 698138781 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The interval in which $y = x^2 e^{-x}$ is increasing is

Options :

1. ✖ $(-\infty, \infty)$

2. ✖ $(-2, 0)$

3. ✖ $(2, \infty)$

4. ✔ $(0, 2)$

Question Number : 132 Question Id : 698138782 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The rate of change of volume of a sphere with respect to its surface area, when the radius is 2cm, is

Options :

1. ✖ $2cm^3/cm^2$

2. ✔ $1cm^3/cm^2$

3. ✖ $5cm^3/cm^2$

4. ✖ $3cm^3/cm^2$

Question Number : 133 Question Id : 698138783 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The function $f(x) = \tan^{-1}(\sin x + \cos x)$ is strictly decreasing in

Options :

1. ✖ $\left(0, \dfrac{\pi}{4}\right)$

2. ✔ $\left(\dfrac{\pi}{4}, \dfrac{\pi}{2}\right)$

3. ✖

$$\left[\frac{\pi}{2}, \frac{\pi}{4}\right]$$

4. ✖ $\left(0, \frac{\pi}{2}\right)$

Question Number : 134 Question Id : 698138784 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\int_8^{13} \frac{\sqrt{21-x}}{\sqrt{x}+\sqrt{21-x}} \, dx$ is

Options :

1. ✔ $\frac{5}{2}$

2. ✖ **0**

3. ✖ $\frac{21}{2}$

4. ✖ **8**

Question Number : 135 Question Id : 698138785 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $\int_0^a \frac{dx}{4+x^2} = \frac{\pi}{8}$ then the value of "a" is

Options :

1. ✖ **4**

2. ✔ **2**

3. ✖ **1**

4. ✖ **3**

Question Number : 136 Question Id : 698138786 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\displaystyle\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} \frac{\cos x}{1 + e^x}\, dx$ is equal to .....

Options :

1. ✔ **1**

2. ✖ **-1**

3. ✖ **0**

4. ✖ **2**

Question Number : 137 Question Id : 698138787 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Evaluate $\int \dfrac{dx}{\sin^2 x \cos^2 x}$

Options :

1. ✖ $\tan x + \cot x + c$

2. ✔ $\tan x - \cot x + c$

3. ✖ $\cot x - \tan x + c$

4. ✖ $\cot x - \mathrm{cosec}\, x + c$

Question Number : 138 Question Id : 698138788 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let f(x)=x-[x], for every real x, where [x] is the greatest integer less than or equal to x, then

$\int\limits_{-1}^{1} f(x)\,dx$ is equal to .....

Options :

1. ✖ 0

2. ✖ -1

3. ✔ 1

4.

✴ 2

Question Number : 139 Question Id : 698138789 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Area bounded by the curves $y = x$ and $y = x^3$ is

Options :

1. ✶ 0

2. ✔ $\dfrac{1}{2}$

3. ✶ $\dfrac{1}{4}$

4. ✶ $\dfrac{2}{3}$

Question Number : 140 Question Id : 698138790 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $\dfrac{1}{|X|-3} \leq \dfrac{1}{2}$, then x belongs to

Options :

1. ✔ $(-\infty, -5] \cup (-3, 3) \cup [5, \infty)$

2. ✘ $(-\infty, -5) \cup (-3, 3) \cup (5, \infty)$

3. ✘ $(-\infty, -5] \cup [5, \infty)$

4. ✘ $(-3, 3)$

Question Number : 141 Question Id : 698138791 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The integrating factor of the differential equation $(1+y^2) + (2xy - \cot y)\dfrac{dy}{dx} = 0$ is

Options :

1. ✔ $1+y^2$

2. ✘ $1-y^2$

3. ✘ $1+x^2$

4. ✘ $1-x^2$

Question Number : 142 Question Id : 698138792 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The sum of the order and degree of the differential equation

$$\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^{1/4} + x^{2023} = 0 \text{ is...}$$

Options :

1. ✖ 2023.25

2. ✔ **6**

3. ✖ **3**

4. ✖ 9/4

Question Number : 143 Question Id : 698138793 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The centre of the circle (x-2a) (x-2b) +(y-2c) (y-2d) =0 is

Options :

1. ✖ (2a,2c)

$(2b,2d)$

2. ✖

$(a+b, c+d)$

3. ✔

$(a-b,c-d)$

4. ✖

Question Number : 144 Question Id : 698138794 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Minimum value of $Z=200x + 500y$ subject to the constraints .
$$x + 2y \geq 10$$
$$3x + 4y \leq 24$$
$$x \geq 0, y \geq 0$$

Options :

1. ✔ **2300**

2. ✖ **3000**

3. ✖ **2500**

4. ✖ **2400**

Question Number : 145 Question Id : 698138795 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An equilateral triangle is inscribed in the parabola $y^2 = 8x$, where one vertex is at the vertex of the parabola, then the area of the triangle is

Options :

1. ✖ $256\sqrt{3}$ sq.units

2. ✖ $64\sqrt{3}$ sq.units

3. ✖ $196\sqrt{3}$ sq.units

4. ✔ $192\sqrt{3}$ sq.units

Question Number : 146 Question Id : 698138796 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The equation of the parabola whose vertex at (0,0) passing through (5,2) and symmetric with y-axis is

Options :

1. ✖ $2y^2 = 25x$

2. ✔

$$2x^2 = 25y$$

3. ✖

$$25x^2 = 2y$$

4. ✖

$$25y^2 = 2x$$

Question Number : 147 Question Id : 698138797 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the points (-2,3, x), (1,2,3) and (7,0, -1) are collinear then the value of x is

Options :

1. ✖ **0**

2. ✖ **3**

3. ✔ **5**

4. ✖ **7**

Question Number : 148 Question Id : 698138798 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A factory has three machines X, Y and Z producing 1000, 2000 and 3000 bolts per day respectively. The machine X produces 1%, Y Produces 1.5% and Z produces 2% defective bolts. At the end of a day, a bolt is drawn at random and is found to be defective. Find the Probability that this defective bolt has been produced by machine X?

Options :

1. ✗ $\dfrac{3}{10}$

2. ✗ $\dfrac{2}{10}$

3. ✔ $\dfrac{1}{10}$

4. ✗ $\dfrac{7}{10}$

Question Number : 149 Question Id : 698138799 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A pair of die is rolled. Consider the events A={1,3,5}, B={2,3} and C={2,3,4,5} then $P\left(A \cup B / C\right)$ is ....

Options :

1. ✗ $\dfrac{1}{4}$

2. ✖ $\dfrac{3}{5}$

3. ✖ $\dfrac{1}{6}$

4. ✔ $\dfrac{3}{4}$

Question Number : 150 Question Id : 698138800 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The standard deviation of data 6,5,9,13,12,8 and 10 is

Options :

1. ✔ $\sqrt{\dfrac{52}{7}}$

2. ✖ $\dfrac{52}{7}$

3. ✖ $\sqrt{6}$

4. ✖ 6