

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 13th September 2021 Shift 2
Subject Name :	BASLP - PCM
Creation Date :	2021-09-13 17:11:52
Duration :	120
Total Marks :	120
Display Marks:	No
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? (SA type of questions will be always auto saved) :	Yes

BASLP - PCM

Group Number : 1

Group Id : 21585715

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Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120
Is this Group for Examiner? :	No

PHYSICS

Section Id :	21585743
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	40
Section Marks :	40
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	21585743
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 2158571541 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A particle A with a charge of 2.0×10^{-6} C and a mass of 800 g is placed at the bottom of a smooth inclined plane of length 1 m and an inclination of 30° . Where another particle B, with the same charge and mass, should be placed (approximately) on the inclined plane so that it may remain in equilibrium?

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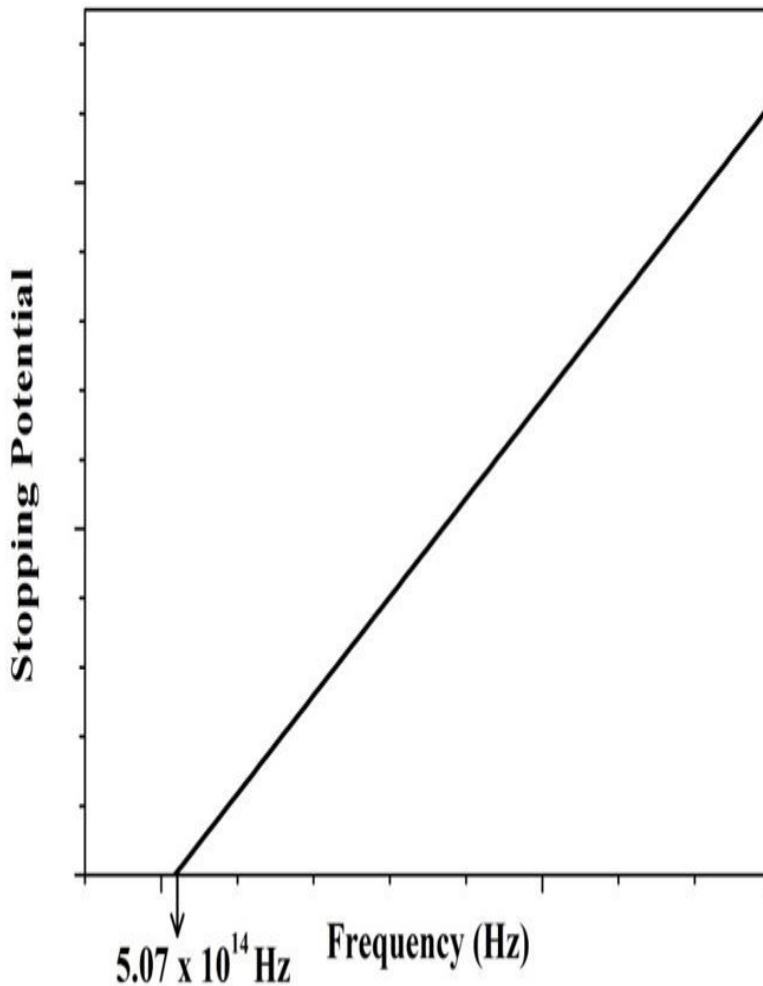
Options :

1. ✘ 9 cm from the top
2. ✘ 0.3 cm from the top
3. ✔ 9 cm from the bottom
4. ✘ 0.3 cm from the bottom

Question Number : 2 Question Id : 2158571542 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The variation of the stopping potential of Cesium with the frequency is shown below. Find the work function of cesium.



Options :

1. ✘ 2.1 J
2. ✘ 3.35 J
3. ✘ 3.35 eV
4. ✔ 2.1 eV

Question Number : 3 Question Id : 2158571543 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Twelve charges each of q C are placed at equal distances on the circle of a radius of R (at the positions of the numbers of a clock). Which of the following is correct if all the charges are doubled?

Options :

1. ✘ The electric potential at the centre becomes 2 times the original
2. ✔ The electric potential at the centre is just doubled
3. ✘ The electric field at the centre is doubled
4. ✘ Both the electric field and the electric potential at the centre are doubled

Question Number : 4 Question Id : 2158571544 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A storage capacitor has a capacitance of 55 fF ($1 \text{ fF} = 10^{-15} \text{ F}$). If the capacitor is charged to 1.6 V , how many excess electrons are on its negative plate?

Options :

1. ✔ 5.5×10^5
2. ✘ 8.8×10^6
3. ✘ 5.5×10^6
4. ✘ 8.8×10^5

Question Number : 5 Question Id : 2158571545 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

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Correct Marks : 1 Wrong Marks : 0

Which of the following can be taken as a source of coherent electromagnetic waves?

Options :

1. ✘ two lasers of same frequency
2. ✘ two sodium vapour lamps
3. ✘ a pinhole in a cover over a mono chromatic light source and its reflection in a mirror
4. ✔ two pinholes in a cover over a monochromatic light source

Question Number : 6 Question Id : 2158571546 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The magnetic field inside a uniform long solenoid, carrying a current of 5.0 A is $\pi \times 10^{-2}$ T. Find the mass of the total wire that to be used for constructing the solenoid?

(length of the solenoid = $\frac{1}{\pi}$ m, radius of the cross section of the solenoid = 5 cm, the

radius of the wire used = $\frac{10^{-3}}{\sqrt{\pi}}$ m, the density of the material of the wire used = 10^3

kg/m³)

Options :

1. ✘ 5 kg
2. ✔ 0.5 kg
3. ✘ 1 kg
4. ✘ 0.1 kg

Question Number : 7 Question Id : 2158571547 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

What is the energy difference between n=2 and n=5 states of a Hydrogen atom?

Options :

1. ✓ 2.86 eV
2. ✗ 4.08 eV
3. ✗ 13.60 eV
4. ✗ 4.08 J

Question Number : 8 Question Id : 2158571548 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

What is the ratio (approximately) of the longest wavelength to the shortest wavelength present in the Paschen series of spectral lines?

Options :

1. ✗ 4:3
2. ✗ 9:5
3. ✗ 25:9
4. ✓ 16:7

Question Number : 9 Question Id : 2158571549 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A magnet is moved towards a conducting wall in two ways- (i) slowly and (ii) quickly. Select the correct statement.

Options :

1. ✗ The induced emf and induced charge are same in both the cases
2. ✗ The induced emf is more in (i) and induced charges are same in both the cases
3. ✓ The induced emf is more in (ii) and induced charges are same in both the cases
4. ✗ The induced emf and induced charge are more in (ii)

Question Number : 10 Question Id : 2158571550 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The speed of electromagnetic waves in vacuum is,

Options :

1. ✓ $3 \times 10^8 \text{ ms}^{-1}$
2. ✗ $3 \times 10^8 \text{ kms}^{-1}$
3. ✗ $3 \times 10^8 \text{ cms}^{-1}$
4. ✗ $3 \times 10^{10} \text{ ms}^{-1}$

Question Number : 11 Question Id : 2158571551 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A electric field of a plane electromagnetic wave propagating in the x- direction is represented by the equation, $E = (30 \text{ V/m}) \sin \left[\frac{2\pi}{5.0 \text{ mm}} (ct - x) \right]$. Select the correct statement about the wavelength and the electric field amplitude of this wave.

Options :

1. ✗ The electric field is in the x direction and has a maximum magnitude of 30V/m, the wavelength is 5mm
2. ✗ The electric field is in the y direction and has a maximum magnitude of 30 V/m, the wavelength is 5m
3. ✗ The electric field is in the x direction and has a maximum magnitude of 30 V/m, the wavelength is 5m
4. ✓ The electric field is in the y direction and has a maximum magnitude of 30 V/m, the wavelength is 5mm

Question Number : 12 Question Id : 2158571552 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 1 Wrong Marks : 0

The tension developed in a string is an example of

Options :

1. ✘ gravitational force
2. ✔ electro-magnetic force
3. ✘ strong nuclear force
4. ✘ weak nuclear force

Question Number : 13 Question Id : 2158571553 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A boy is throwing balls into the air, with the same force, throwing one whenever the previous one is at its highest point. How high do the balls rise if he throws one ball in every 2 seconds? (take “g” = 10 ms^{-2})

Options :

1. ✔ 20 m
2. ✘ 10 m
3. ✘ 40 m
4. ✘ 25 m

Question Number : 14 Question Id : 2158571554 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A projectile of mass m is thrown with a speed v making an angle of 45 degrees with the horizontal. Neglecting air resistance, which of the following is correct about the change of momentum of the projectile from its point of departure to its point of arrival at the ground?

Options :

The change of momentum along the vertical and horizontal directions are

1. ✘ zero

The change of momentum along the vertical direction is zero whereas the

2. ✘ change of momentum along the horizontal direction is $\sqrt{2} mv$

The change of momentum along the horizontal and vertical direction are

3. ✘ equal and is $\sqrt{2} mv$

The change of momentum along the horizontal direction is zero whereas the change of momentum along the vertical direction is $\sqrt{2} mv$

4. ✔

Question Number : 15 Question Id : 2158571555 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The equation of a wave travelling on a string stretched along the X- axis is given

by $y = Ae^{-\left(\frac{x}{a} + \frac{t}{T}\right)}$. Where is the maximum of the pulse located at $t=2T$?

Options :

1. ✘ $x = -A$

2. ✘ $x = -2A$

3. ✘ $x = -a$

4. ✔ $x = -2a$

Question Number : 16 Question Id : 2158571556 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A lady wearing ear- ring which has a 3.0 cm long light suspension wire. The lady sits on a merry- go- round moving at 4 ms^{-1} in a circle of radius 2 m. Find the time period of small oscillation of the ear- ring.

Options :

1. ✓ 0.30 s
2. ✗ 0.85 s
3. ✗ 0.15 s
4. ✗ 2 s

Question Number : 17 Question Id : 2158571557 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

When an ideal diatomic gas is heated at constant pressure, the fraction of the heat energy supplied which increases the internal energy of the gas is

Options :

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

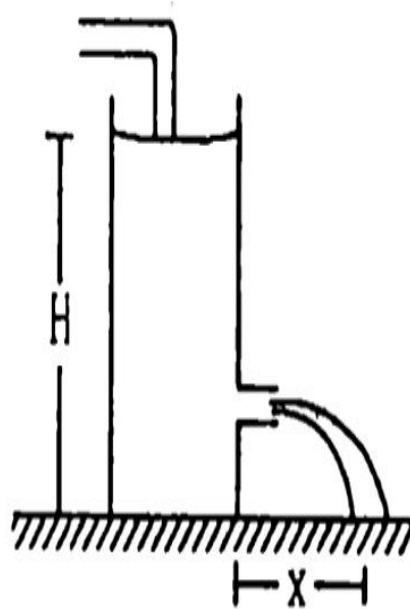
Question Number : 18 Question Id : 2158571558 Question Type : MCQ Option Shuffling : No Is

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Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Water level is maintained in a cylindrical vessel, resting on a horizontal surface, up to a fixed height H . At what height a hole should be made on the vessel so that the water stream coming out of the hole strikes the horizontal plane at the greatest distance from the vessel.



Options :

1. ✘ $\frac{2H}{3}$

2. ✘ $\frac{3H}{4}$

3. ✔ $\frac{H}{2}$

4. ✘ $\frac{H}{3}$

Question Number : 19 Question Id : 2158571559 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A step-up transformer operates on a 200V line. The ratio of primary to secondary turns is 1:10. Then output voltage in the secondary coil is

Options :

1. ✘ 20 V
2. ✘ 200 V
3. ✘ 1000 V
4. ✔ 2000 V

Question Number : 20 Question Id : 2158571560 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A stone is thrown upward with a speed u from the top of a tower. It reaches the ground with a speed of $3u$. The height of the tower is

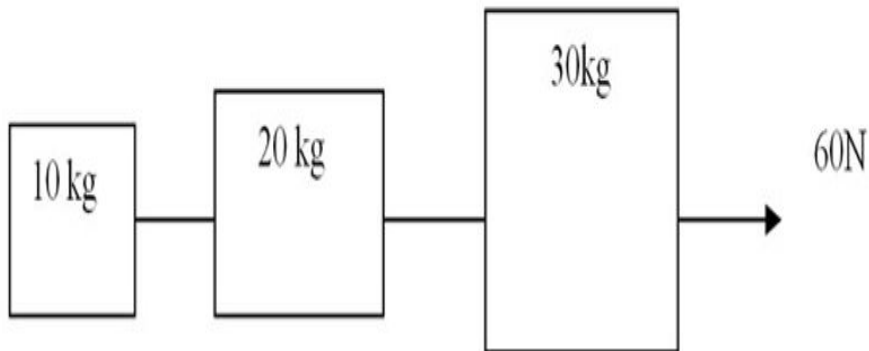
Options :

1. ✘ $\frac{3u^2}{g}$
2. ✔ $\frac{4u^2}{g}$
3. ✘ $\frac{6u^2}{g}$
4. ✘ $\frac{9u^2}{g}$

Question Number : 21 Question Id : 2158571561 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Three blocks of masses 10kg, 20kg and 30kg are connected by strings on a smooth horizontal table as shown and pulled to the right with a force of 60N. The acceleration of the system is



Options :

1. ✘ 6m/s^2

2. ✘ 3m/s^2

3. ✔ 1m/s^2

4. ✘ 2m/s^2

Question Number : 22 Question Id : 2158571562 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

For the molecules of a gas in random motion,

Options :

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1. ✘ $v_x = v_y = v_z$

2. ✘ $v_x^2 = v_y^2 = v_z^2$

3. ✘ $\sqrt{v_x} = \sqrt{v_y} = \sqrt{v_z}$

4. ✔ $\overline{v_x^2} = \overline{v_y^2} = \overline{v_z^2}$

Question Number : 23 Question Id : 2158571563 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A cylinder of capacity 44.8 litre contains Helium gas at STP. What is the amount of heat required to increase the temperature of the gas in the cylinder by 10 degree C ?(R = 8.31J/mol/K)

Options :

1. ✘ 581 J

2. ✘ 831 J

3. ✘ 415.5 J

4. ✔ 249 J

Question Number : 24 Question Id : 2158571564 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A uniform force $5\mathbf{i} + 2\mathbf{j}$ N acting on a mass of 1 kg displaces it from $\mathbf{i} + \mathbf{j} + \mathbf{k}$ to $2\mathbf{i} - \mathbf{j} + 3\mathbf{k}$ m. The work done by the force on the body is

Options :

1. ✘ 6 J

2. ✘ 15 J

3. ✘ 7J

4. ✔ 1J

Question Number : 25 Question Id : 2158571565 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A satellite is moving with a kinetic energy E in a circular orbit around earth. The minimum additional kinetic energy required for it to escape to outer space is

Options :

1. ✘ $2E$

2. ✔ E

3. ✘ $\sqrt{2} E$

4. ✘ $\frac{E}{\sqrt{2}}$

Question Number : 26 Question Id : 2158571566 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Internal energy of an ideal gas depends

Options :

1. ✘ only on volume

2. ✔ only on temperature

3. ✘ both volume and temperature

4. ✘ does not depend on both

Question Number : 27 Question Id : 2158571567 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A transverse harmonic wave on a string is given by $y(x,t) = 3.0 \left(\sin 36t + 0.018x + \frac{\pi}{4} \right)$ where x and y are in cm and t in s. The distance between two consecutive crests in the wave is

Options :

1. ✓ 3.49 m
2. ✗ 3.0 m
3. ✗ 1.8 m
4. ✗ 36 m

Question Number : 28 Question Id : 2158571568 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The magnetic flux linked with a circuit is $\Phi = 5t^2 + 3t + 5$ Wb. The magnitude of induced emf at $t = 3$ s is

Options :

1. ✓ 33V
2. ✗ 30V
3. ✗ 38V
4. ✗ 13V

Question Number : 29 Question Id : 2158571569 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The instantaneous values of alternating current and voltage in a circuit are given by $i = \frac{1}{\sqrt{2}} \sin(100\pi t)$ A and $v = \frac{1}{\sqrt{2}} \sin(100\pi t + \pi/3)$ V. The average power consumed by the circuit is

Options :

1. ✗ $\frac{1}{4}$ W

2. ✗ $\frac{\sqrt{3}}{4}$ W

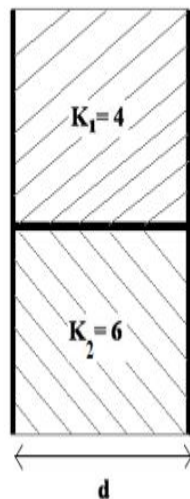
3. ✘ $\frac{1}{2} W$

4. ✔ $\frac{1}{8} W$

Question Number : 30 Question Id : 2158571570 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A capacitor has a capacitance $1 \mu\text{F}$. It is divided into two equal halves, filled with two dielectrics of dielectric constants 4 and 6. The new capacitance is



Options :

1. ✘ $10 \mu\text{F}$

2. ✔ $5 \mu\text{F}$

3. ✘ $4 \mu\text{F}$

4. ✘ $7 \mu\text{F}$

Question Number : 31 Question Id : 2158571571 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

N cells each of emf E volt and internal resistance r ohm are connected in series with an external resistance R. The current will increase 'N' times that of a single cell if

Options :

1. ✓ R is very large compared to r
2. ✗ R is very small compared to r
3. ✗ $R = r$
4. ✗ Irrespective of the magnitudes of R and r

Question Number : 32 Question Id : 2158571572 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

In a semiconductor at room temperature

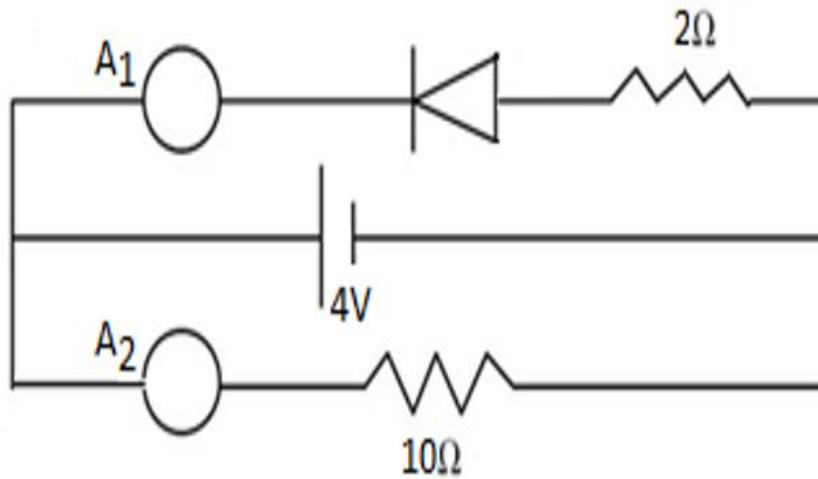
Options :

1. ✓ Valance band is partially empty and conduction band is partially filled
2. ✗ Valance band is completely filled and conduction band is partially filled
3. ✗ Valance band is completely filled
4. ✗ Conduction band is completely filled

Question Number : 33 Question Id : 2158571573 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The readings of the ammeters in the given circuit are



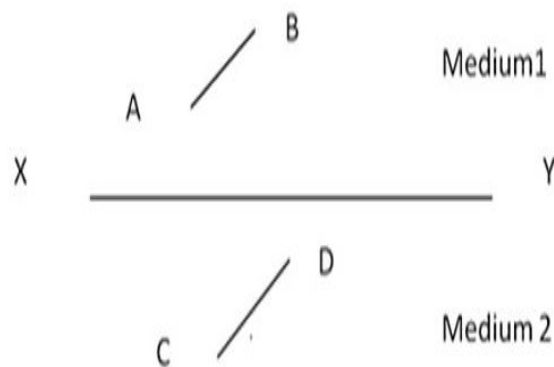
Options :

1. ✘ 0.5A, 0.33A
2. ✘ 0.5A, 0.4A
3. ✔ 0A, 0.4A
4. ✘ 0A, 0A

Question Number : 34 Question Id : 2158571574 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

XY separates two transparent media. AB represents wave front travelling through medium 1 incident on XY and CD represents wave front in medium 2 after refraction.



Which of the following statements is true? Light travels as

Options :

1. ✔ Parallel beam in each medium
2. ✘ Converging in 1 and diverging 2

3. ✘ Diverging in 1 and converging in 2

4. ✘ Converging in both

Question Number : 35 Question Id : 2158571575 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Kirchoff's voltage law is consequence of

Options :

1. ✘ Newtons third law

2. ✘ Newtons second law

3. ✘ Ohms law

4. ✔ Law of conservation of energy

Question Number : 36 Question Id : 2158571576 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The radiation used in physiotherapy is

Options :

1. ✘ UV

2. ✔ IR

3. ✘ X Ray

4. ✘ Microwave

Question Number : 37 Question Id : 2158571577 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Electromotive force represents

Options :

1. ✘ Force

2. ✘ Energy

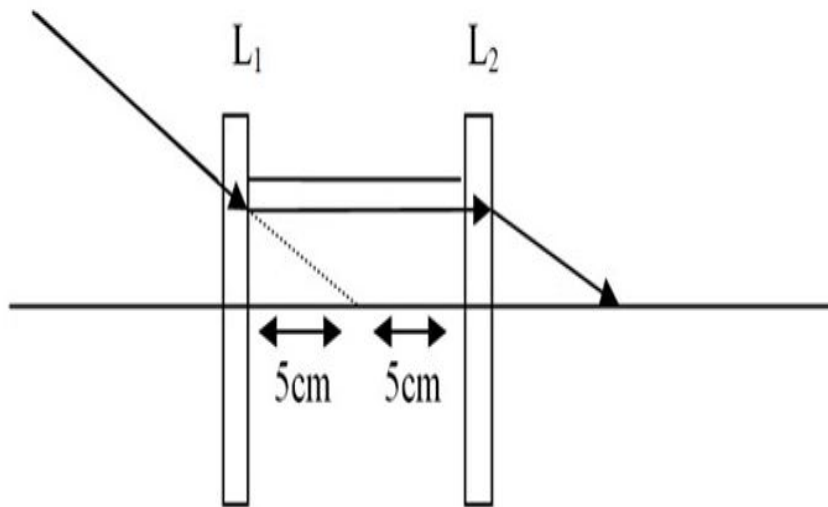
3. ✓ Energy per unit charge

4. ✗ Current

Question Number : 38 Question Id : 2158571578 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

In the ray diagram, what will be the focal lengths of the first and second lens if the incident light ray passes without any deviation?



Options :

1. ✗ -5,10

2. ✗ +5,+10

3. ✓ -5, +5

4. ✗ +5,+5

Question Number : 39 Question Id : 2158571579 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

In an AC circuit, the potential difference across the inductor and resistor joined in series are respectively 16V and 20 V. The total potential difference of the source is

Options :

1. ✗ 20 V

2. ✓ 25.6 V

3. ✖ 31.9 V

4. ✖ 53.5 V

Question Number : 40 Question Id : 2158571580 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Horizontal Component of Earth's magnetic field at a place is 3.2×10^{-5} T and angle of dip is 60° . The resultant intensity of Earth's magnetic field at that place is

Options :

1. ✖ 3.2×10^{-5} T

2. ✔ 6.4×10^{-5} T

3. ✖ 1.6×10^{-5} T

4. ✖ 12.8×10^{-5} T

CHEMISTRY

Section Id :	21585744
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	40
Section Marks :	40
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1

Sub-Section Id :

21585744

Question Shuffling Allowed :

Yes

Question Number : 41 Question Id : 2158571581 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

What will be the pH of a solution, made by dissolving 0.365g of hydrogen chloride in water, to make 1 litre solution:

Options :

1. ✘ 0.001

2. ✘ 0.01

3. ✘ 1

4. ✔ 2

Question Number : 42 Question Id : 2158571582 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Two water solutions are made in laboratory, one by dissolving 180.16 g/mol of fructose in 1000g of water and the other by dissolving 342.3g/mol of lactose in 1000g of water.

Options :

1. ✘ Fructose solution would have lower freezing point

2. ✘ Lactose would have lower freezing point

3. ✔ Both solutions would have same freezing points

4. ✘ The freezing point of lactose would be lowered twice as much as that of fructose

Question Number : 43 Question Id : 2158571583 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

What is the ΔH° value for the decomposition of potassium chlorate, using the following informations?



(ΔH°_f Values: $\text{KClO}_3(\text{s}) = -358 \text{ J/mol}$, $\text{KCl}(\text{s}) = -410 \text{ J/mol}$, $\text{O}_2(\text{g}) = 0 \text{ Kcal/mol}$)

Options :

1. ✘ 52.0J
2. ✔ -52.0J
3. ✘ $\frac{3}{2}(768\text{J})$
4. ✘ $-\frac{3}{2}(768\text{J})$

Question Number : 44 Question Id : 2158571584 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

In $\text{SF}_4 \Rightarrow \text{SF}_6$, the hybridisation changes from:

Options :

1. ✘ sp^2 to sp^3
2. ✘ sp^3 to $sp^3 d$
3. ✔ $sp^3 d$ to $sp^3 d^2$
4. ✘ $sp^3 d^2$ to $sp^3 d^3$

Question Number : 45 Question Id : 2158571585 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Element A has an outer electronic configuration of $4s^2$. Element B is directly placed below the element A in the periodic table. The nature of bond formed between A & B in their solid state will be:

Options :

1. ✘ Covalent
2. ✘ Ionic
3. ✘ Co-ordinate
4. ✔ Metallic

Question Number : 46 Question Id : 2158571586 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

At 300 K, 36 g of glucose present/litre of its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of the solution is 1.52 bar at the same temperature, then the concentration of solution is:

Options :

1. ✔ 6.10×10^{-2} mol/L
2. ✘ 6.10×10^{-4} mol/L
3. ✘ 4.4×10^{-2} mol/L
4. ✘ 4.4×10^{-3} mol/L

Question Number : 47 Question Id : 2158571587 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

$\text{SO}_3 + \text{H}_2\text{O} \rightleftharpoons \text{X}$, In the reaction given above the basicity of X is:

Options :

1. ✖ 1
2. ✔ 2
3. ✖ 3
4. ✖ 4

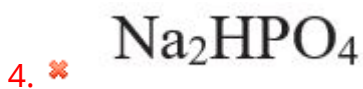
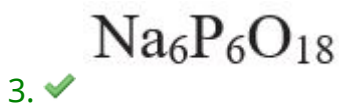
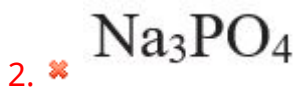
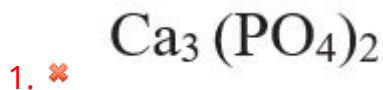
Question Number : 48 Question Id : 2158571588 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which of the following compounds is used for water softening?

Options :



Question Number : 49 Question Id : 2158571589 Question Type : MCQ Option Shuffling : No Is

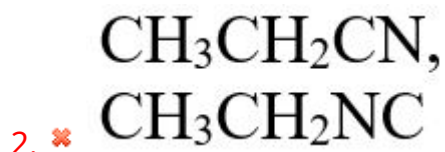
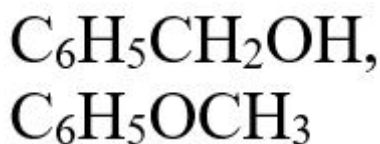
Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which among the following pairs does not represent functional isomerism?

Options :

1. ✖



Question Number : 50 Question Id : 2158571590 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Ethanal and Methanal are formed when _____ compound undergoes reductive ozonolysis

Options :

1. ✘ Ethylene
2. ✘ Propylene
3. ✘ Butylene
4. ✔ Propene

Question Number : 51 Question Id : 2158571591 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The number of KNO_3 formula units present in 100mL of 0.1M solution is:

Options :

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1. ✘ 3.011×10^{21}

2. ✘ 3.011×10^{23}

3. ✔ 6.022×10^{21}

4. ✘ 6.022×10^{23}

Question Number : 52 Question Id : 2158571592 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

One Faraday of electricity will deposit one-gram atomic weight of metal from solution of

Options :

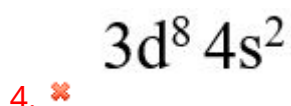
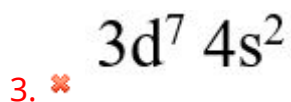
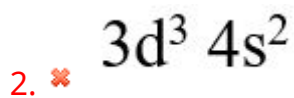
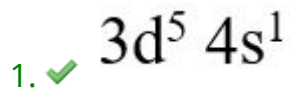


Question Number : 53 Question Id : 2158571593 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

An element which has f configuration exhibits a greater number of oxidation states

Options :



Question Number : 54 Question Id : 2158571594 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The number of binding sites present in EDTA are

Options :

1. ✗ 2 oxygen and 2 nitrogen

2. ✗ 2 oxygen and 4 nitrogen

3. ✓ 4 oxygen and 2 nitrogen

4. ✗ 4 oxygen and 4 nitrogen

Question Number : 55 Question Id : 2158571595 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The rate constant for a first order reaction is 60 s^{-1} . How much time will it take to reduce the initial concentration of the reactant to its $1/16^{\text{th}}$ value? ($\log 16 = 1.2041$)

Options :

1. ✓ $4.6 \times 10^{-2} \text{ s}$

$$4.6 \times 10^{-3} \text{ s}$$

2. ✘

$$4.6 \times 10^{-4} \text{ s}$$

3. ✘

$$4.6 \times 10^{-5} \text{ s}$$

4. ✘

Question Number : 56 Question Id : 2158571596 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Picric acid is

Options :

1. ✘ Mineral acid
2. ✘ Aliphatic carboxylic acid
3. ✘ Aromatic carboxylic acid
4. ✔ Phenolic compound

Question Number : 57 Question Id : 2158571597 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A new C-C bond is formed in which of the following reaction?

Options :

1. ✘ Swartz reaction
2. ✔ Aldol condensation reaction
3. ✘ Cannizaro reaction
4. ✘ Sandmeyers reaction

Question Number : 58 Question Id : 2158571598 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The product formed when isopropyl alcohol on heating in presence of Cu catalyst at 573K is

Options :

1. ✘ Propene
2. ✘ Propyne
3. ✘ Propanal
4. ✔ Propanone

Question Number : 59 Question Id : 2158571599 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which one of the following reagents required to bring about the conversion of Toluene to Benzaldehyde are

Options :

1. ✔ $\text{CrO}_2\text{Cl}_2/\text{CS}_2,$
 H_3O^+
2. ✘ $\text{HBr, aq. NaOH } \Delta$
3. ✘ $\text{Br}_2/\text{sunlight, } 383\text{K}$
 aq. KOH
4. ✘ $\text{Br}_2/\text{alcoholic}$
 NaOH

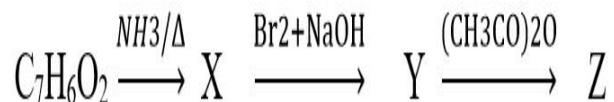
Question Number : 60 Question Id : 2158571600 Question Type : MCQ Option Shuffling : No Is

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Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

An aromatic compound with molecular formula $C_7H_6O_2$ undergoes series of reactions as given below. Identify the product Z in the reaction:



Options :

1. ✓ Amide
2. ✗ Amine
3. ✗ Acid
4. ✗ Acid anhydride

Question Number : 61 Question Id : 2158571601 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Benzene on nitration with nitrating mixture gives nitrobenzene. In this reaction, nitric acid acts as

Options :

1. ✗ Acid
2. ✓ Base
3. ✗ Catalyst
4. ✗ Reducing agent

Question Number : 62 Question Id : 2158571602 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

When C_2H_5I is heated with Potassium phenoxide, the compound formed is:

Options :

1. ✗ Anisole

- ✘ Phenol
- ✘ Benzene
- ✔ phenetole

Question Number : 63 Question Id : 2158571603 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The oxidation state of iron in brown ring complex is

Options :

1. ✔ +1

2. ✘ +3

3. ✘ +2

4. ✘ 0

Question Number : 64 Question Id : 2158571604 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

How many moles of iodine molecule(I_2) are liberated when 1 mol of potassium dichromate react with potassium iodide?

Options :

1. ✘ 1

2. ✘ 2

3. ✔ 3

4. ✘ 4

Question Number : 65 Question Id : 2158571605 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which one of the following element can form more compounds with fluorine and oxygen?

Options :

1. ✘ He
2. ✘ Ne
3. ✔ Xe
4. ✘ Ar

Question Number : 66 Question Id : 2158571606 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The shape of SF₄ molecule is

Options :

1. ✘ Linear
2. ✔ see-saw
3. ✘ triangular planar
4. ✘ pyramidal

Question Number : 67 Question Id : 2158571607 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

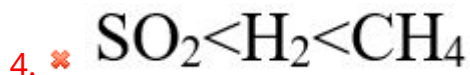
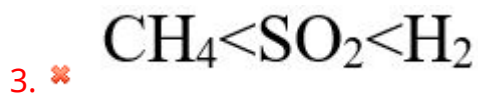
Correct Marks : 1 Wrong Marks : 0

The correct order of adsorption of the following gases on the same mass of charcoal at the same temperature and pressure is

Options :



1. ✘



Question Number : 68 Question Id : 2158571608 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which of the following is/are negative during adsorption?

a) ΔH (b) ΔS (c) ΔG

Options :

1. ✗ a only

2. ✗ c only

3. ✗ a and c

4. ✓ a, b and c

Question Number : 69 Question Id : 2158571609 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Reaction of Benzene with chloropropane in presence of anhy. $AlCl_3$ gives

Options :

1. ✗ Cumene

2. ✓ n-propyl benzene

3. ✗ toluene

4. ✘ ethyl benzene

Question Number : 70 Question Id : 2158571610 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The enthalpy of formation of NH_3 is -46 kJmol^{-1} . The enthalpy change for the reaction $2\text{NH}_3(\text{g}) \rightarrow \text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$, is

Options :

1. ✘ +23kJ

2. ✔ +92kJ

3. ✘ +46kJ

4. ✘ +184kJ

Question Number : 71 Question Id : 2158571611 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which of the following is extensive?

Options :

1. ✔ heat capacity

2. ✘ viscosity

3. ✘ density

4. ✘ surface tension

Question Number : 72 Question Id : 2158571612 Question Type : MCQ Option Shuffling : No Is

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Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Arrange the following in the increasing order of acidic nature

1. Perchloric Acid, 2. Hypochlorous Acid, 3. Chloric Acid, 4. Chlorous Acid

Options :

1. ✘ 1 3 2 4

2. ✘ 1 4 2 3

3. ✔ 2 4 3 1

4. ✘ 4 1 2 3

Question Number : 73 Question Id : 2158571613 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which of the following does not impart any color to the flame?

Options :

1. ✔ Mg

2. ✘ Ca

3. ✘ Li

4. ✘ Ba

Question Number : 74 Question Id : 2158571614 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The product formed when ethyl tert.butyl ether reacts with hydrogen Iodide?

Options :

Ethyl Iodide and
tert.butyl alcohol

1. ✘

2. ✔

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Tert.butyl Iodide and ethanol

3. ✖ Sec butyl Iodide and ethanol

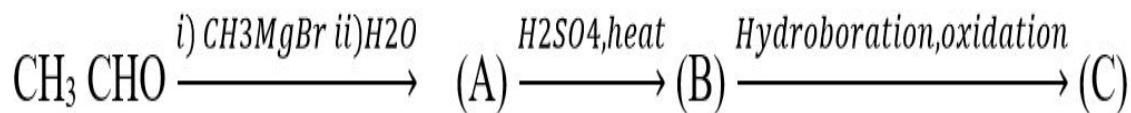
Ethane and tert.butane

4. ✖

Question Number : 75 Question Id : 2158571615 Question Type : MCQ Option Shuffling : No Is
Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Compounds A and C in the following reaction are:



Options :

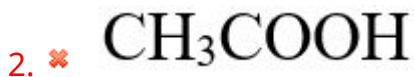
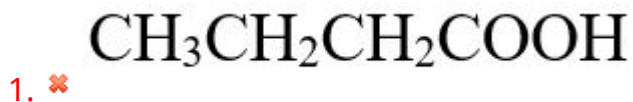
1. ✖ Identical
2. ✔ Positional isomers
3. ✖ Functional isomers
4. ✖ Optical isomers

Question Number : 76 Question Id : 2158571616 Question Type : MCQ Option Shuffling : No Is
Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

An organic compound 'A' on treatment with NH_3 gives 'B' which on heating gives 'C'. On treatment of 'C' with Br_2 in the presence of KOH produces ethanamine. The compound 'A' is

Options :



Question Number : 77 Question Id : 2158571617 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Which one of the following is not an example of Lyophilic colloids when it is mixed with suitable dispersion medium?

Options :

1. ✘ Gelatine

2. ✔ Metal Sulphides

3. ✘ Starch

4. ✘ Gum

Question Number : 78 Question Id : 2158571618 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

For the electron of oxygen atom, which of the following statement is correct

Options :

1. ✘ An electron in the 3d orbital has the same energy as an electron in the 2p orbital

2. ✘ An electron in the 2s orbital has the same energy as an electron in the 2p orbital

3. ✔ The two electrons present in the 2s orbital have same spin quantum number(m) but opposite

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sign

4. ✘ The two electrons present in the 3f orbital have same spin quantum number(m) but opposite sign

Question Number : 79 Question Id : 2158571619 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Arrange the following alkylhalides in decreasing order of rate of β - elimination reaction with alcoholic KOH

i) $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{Br}$ ii) $\text{CH}_3\text{CH}_2\text{Br}$ iii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$

Options :

1. ✘ i > ii > iii

2. ✘ iii > ii > i

3. ✘ ii > iii > i

4. ✔ i > iii > ii

Question Number : 80 Question Id : 2158571620 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

What is the total number of orbitals associated with the Principal Quantum number $n = 3$?

Options :

1. ✘ 3

2. ✘ 6

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3. ✓ 9

4. ✘ 12

MATHEMATICS

Section Id :	21585745
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	40
Section Marks :	40
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	21585745
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 2158571621 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $x\sqrt{1+y} + y\sqrt{1+x} = 0$ and $x \neq y$ then $\frac{dy}{dx} =$

Options :

1. ✘ $\frac{1}{1+x}$

2. ✘ $\frac{1}{(1+x)^2}$

3. ✓
$$\frac{-1}{(1+x)^2}$$

4. ✗
$$\frac{-1}{1+x}$$

Question Number : 82 Question Id : 2158571622 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A letter is known to have come from either 'LONDON' or 'CLIFTON'. On the envelope just two consecutive letters 'ON' are visible. The probability that the letter comes from LONDON is

Options :

1. ✓
$$\frac{12}{17}$$

2. ✗
$$\frac{5}{17}$$

3. ✗
$$\frac{3}{17}$$

4. ✗
$$\frac{2}{5}$$

Question Number : 83 Question Id : 2158571623 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The equations of the tangents to the hyperbola $x^2 - 4y^2 = 4$ which are perpendicular to the line $x+2y = 0$ is

Options :

1. ✘ $2x-y+5=0$

2. ✔ $2x-y \pm \sqrt{15}=0$

3. ✘ $2x+y+10=0$

4. ✘ $2x-y+19=0$

Question Number : 84 Question Id : 2158571624 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The mean deviation about the mean for the data 38,70,48,40,42,55,63,46,54,44 is

Options :

1. ✔ 8.4

2. ✘ 8.2

3. ✘ 8.1

4. ✘ 8

Question Number : 85 Question Id : 2158571625 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The number of 4 digit even numbers that can be formed using 0,1,2,3,4,5,6 without repetition is

Options :

1. ✘ 120

2. ✘ 300

3. ✔ 420

4. ✘ 20

Question Number : 86 Question Id : 2158571626 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The ratio in which the line $3x+4y+2=0$ divides the distance between the lines $3x+4y+5=0$ and $3x+4y-5=0$ is

Options :

1. ✘ 1:2

2. ✔ 3:7

3. ✘ 2:3

4. ✘ 2:5

Question Number : 87 Question Id : 2158571627 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

$$\text{If } f(x) = \begin{cases} \frac{\sqrt{1+px} - \sqrt{1-px}}{x}, & \text{for } -1 \leq x < 0 \\ \frac{2x+1}{x-2}, & \text{for } 0 \leq x \leq 1 \end{cases}$$

is continuous in $[-1, 1]$, then 'p' is

Options :

1. ✘ $\frac{1}{2}$

2. ✘ 2

3. ✘ -2

4. ✔ $\frac{-1}{2}$

Question Number : 88 Question Id : 2158571628 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If x , $2x+2$ and $3x+3$ are in G.P then 4th term is

Options :

1. ✘ 27

2. ✘ -27

3. ✘ 13.5

4. ✔ -13.5

Question Number : 89 Question Id : 2158571629 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $y = \sin^{-1}x$, then $(1-x^2)y_2 - xy_1$ is

Options :

1. ✓ 0

2. ✗ y

3. ✗ 2y

4. ✗ -y

Question Number : 90 Question Id : 2158571630 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\frac{\pi}{2}} \frac{\sin^3 x}{\sin x + \cos x} dx =$$

Options :

1. ✗ $\frac{\pi+1}{4}$

2. ✗ $\frac{\pi-2}{2}$

3. ✗ $\frac{\pi-2}{4}$

4. ✓ $\frac{\pi-1}{4}$

Question Number : 91 Question Id : 2158571631 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The coordinates of the foot of the perpendicular from the point $A(1,1,1)$ on the line joining the points $B(1,4,6)$ and $C(5,4,4)$ are

Options :

1. ✓ $(3,4,5)$

2. ✗ $(4,5,3)$

3. ✗ $(3,-4,5)$

4. ✗ $(3,-4,-5)$

Question Number : 92 Question Id : 2158571632 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If A is 4×4 matrix and $|2A| = 64; B = \text{Adj.} A$ then $|\text{Adj.} B| =$

Options :

1. ✗ 2^9

2. ✓ 2^{18}

3. ✗ 2^{36}

4. ✘ 2^6

Question Number : 93 Question Id : 2158571633 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Let \hat{a} and \hat{b} be two unit vectors. If the vectors $\vec{c} = \hat{a} + 2\hat{b}$ and $\vec{d} = 5\hat{a} - 4\hat{b}$ are perpendicular to each other, then the angle between \hat{a} and \hat{b} is

Options :

1. ✘ $\frac{\pi}{6}$

2. ✘ $\frac{\pi}{2}$

3. ✔ $\frac{\pi}{3}$

4. ✘ $\frac{\pi}{4}$

Question Number : 94 Question Id : 2158571634 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 1 Wrong Marks : 0

The curve passing through the point $(0,1)$ and satisfying the equation

$$\sin\left(\frac{dy}{dx}\right) = a \text{ is :}$$

Options :

$$\cos\left(\frac{y+1}{x}\right) = a$$

1. ✘

$$\cos\left(\frac{x}{y+1}\right) = a$$

2. ✘

$$\sin\left(\frac{y-1}{x}\right) = a$$

3. ✔

$$\sin\left(\frac{x}{y-1}\right) = a$$

4. ✘

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The integral $\int \frac{dx}{x^2 (x^4 + 1)^{3/4}}$ equals :

Options :

$$(x^4 + 1)^{1/4} + c$$

1. ✘

$$-(x^4 + 1)^{1/4} + c$$

2. ✘

$$-\left(\frac{x^4 + 1}{x^4}\right)^{1/4} + c$$

3. ✔

$$\left(\frac{x^4 + 1}{x^4}\right)^{1/4} + c$$

4. ✘

Question Number : 96 Question Id : 2158571636 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The equation of hyperbola whose foci are $(-3,0)$ $(3,0)$ and eccentricity is 3 is given by

Options :

1. ✘ $-8x^2 + y^2 = 1$

2. ✘ $8x^2 - y^2 = 8$

3. ✔ $x^2 - 8y^2 = 8$

4. ✘ $3x^2 - y^2 = 3$

Question Number : 97 Question Id : 2158571637 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The relation R in R defined as $R = \{(a,b): a \leq b^3\}$. Then R is

Options :

1. ✘ Reflexive but not symmetric

2. ✔ Neither reflexive nor symmetric nor transitive

3. ✘ Symmetric and transitive

4. ✘ Reflexive but not transitive

Question Number : 98 Question Id : 2158571638 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If all the permutations of the word AGAIN are listed in dictionary order, then find 50th word

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Options :

1. ✘ NAAGI
2. ✘ NAGAI
3. ✔ NAAIG
4. ✘ NAIAG

Question Number : 99 Question Id : 2158571639 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The domain & range of the real function f defined by $f(x) = \frac{4-x}{x-4}$ is given by

Options :

Domain = \mathbb{R} ,
Range = $\{-1, 1\}$

1. ✘

Domain = $\mathbb{R} - \{1\}$, Range = \mathbb{R}

2. ✘

Domain = $\mathbb{R} - \{4\}$,
Range = $\{-1\}$

3. ✔

Domain = $\mathbb{R} - \{-4\}$, Range = $\{-1, 1\}$

4. ✘

Question Number : 100 Question Id : 2158571640 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If p_1 and p_2 are the lengths of the perpendiculars from the origin to the straight line $x \sec \theta + y \cos \theta = a$ and $x \cos \theta - y \sin \theta = a \cos 2\theta$ respectively, then the value of $4p_1^2 + p_2^2$ is

Options :

1. ✘ $4a^2$

2. ✘ $2a^2$

3. ✔ a^2

4. ✘ $15a^2$

Question Number : 101 Question Id : 2158571641 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Mean of the first n terms of the A.P. $a, (a + d), (a + 2d), \dots$ is

Options :

1. ✘ $a + \frac{(nd)}{2}$

2. ✔ $a + \frac{(n-1)d}{2}$

3. ✘ $a + (n - 1) d$

4. ✘ $a + nd$

Question Number : 102 Question Id : 2158571642 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

A line segment of length 8 cm is divided into two parts AP and PB by a point P.

If $AP^2 + PB^2$ is minimum. Then AP =

Options :

1. ✘ 6 cm

2. ✘ 5 cm

3. ✔ 4 cm

4. ✘ 2 cm

Question Number : 103 Question Id : 2158571643 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If a ,b ,c d are is GP, then $\frac{(a^2 + b^2 + c^2)(b^2 + c^2 + d^2)}{(ab + bc + cd)^2} =$

Options :

1. ✔ 1

2. ✘ 2

3. ✘ 3

4. ✘ 4

Question Number : 104 Question Id : 2158571644 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $|\vec{a}| = 7$, $|\vec{b}| = 11$ and $|\vec{a} + \vec{b}| = 10\sqrt{3}$, then $|\vec{a} - \vec{b}|$ is equal to

Options :

1. ✓ $2\sqrt{10}$

2. ✗ $\sqrt{20}$

3. ✗ $4\sqrt{10}$

4. ✗ 20

Question Number : 105 Question Id : 2158571645 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $f(x) = \frac{2x - 3\sin x}{3x + 4\tan x}$; $x \neq 0$, is continuous at $x = 0$, then $f(0)$ is

Options :

1. ✓ $\frac{1}{7}$

2. ✗ $\frac{2}{7}$

3. ✘ $-\frac{2}{7}$

4. ✘ $\frac{3}{7}$

Question Number : 106 Question Id : 2158571646 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Probability that A speaks truth is $\frac{4}{5}$ while this probability for B is $\frac{3}{4}$. The probability that they contradict each other when asked to speak on a fact is

Options :

1. ✘ $\frac{3}{20}$

2. ✘ $\frac{1}{5}$

3. ✔ $\frac{7}{20}$

4. ✘ $\frac{4}{5}$

Question Number : 107 Question Id : 2158571647 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The value of $\cos \frac{\pi}{5} \cos \frac{2\pi}{5} \cos \frac{4\pi}{5} \cos \frac{8\pi}{5}$ is

Options :

1. ✘

$$\frac{1}{16}$$

2. ✘ 0

3. ✘ $-\frac{1}{8}$

4. ✔ $-\frac{1}{16}$

Question Number : 108 Question Id : 2158571648 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

$\int e^x \left(\frac{1-x}{1+x^2} \right)^2 dx$ is equals to

Options :

1. ✔ $\frac{e^x}{1+x^2} + C$

2. ✘ $\frac{-e^x}{1+x^2} + C$

3. ✘ $\frac{e^x}{(1+x^2)^2} +$

4. ✘ $\frac{-e^x}{(1+x^2)^2} + C$

Question Number : 109 Question Id : 2158571649 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The integrating factor of the differential equation $\frac{dy}{dx}(x \log x) + y = 2 \log x$

Options :

1. ✘ e^x

2. ✔ $\log x$

3. ✘ $\log(\log x)$

4. ✘ x

Question Number : 110 Question Id : 2158571650 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The order and degree of the differential equation $\left(\frac{dy}{dx}\right)^3 = 3 \left(\frac{d^2y}{dx^2}\right)^4 + y$ is

Options :

1. ✘ 3,4

2. ✘ 2,3

3. ✔ <https://exams.freshersnow.com/category/entrance-exam-question-papers/>

2,4

4. ✘ 1,3

Question Number : 111 Question Id : 2158571651 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The value of $\cos^{-1}\left(-\frac{1}{2}\right) + \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ is

Options :

1. ✔ $\frac{\pi}{3}$

2. ✘ $-\frac{2\pi}{3}$

3. ✘ $\frac{\pi}{6}$

4. ✘ $\frac{2\pi}{3}$

Question Number : 112 Question Id : 2158571652 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $A=[a_{ij}]$ is square matrix of order 3×3 such that $a_{ij} = i^2 - j^2$, then A is

Options: <https://exams.freshersnow.com/category/entrance-exam-question-papers/>

1. ✘ Symmetric Matrix
2. ✘ Null Matrix
3. ✔ Skew Symmetric Matrix
4. ✘ Diagonal Matrix

Question Number : 113 Question Id : 2158571653 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The value of $\int_2^8 |x - 5| dx$ is

Options :

1. ✘ 10
2. ✘ 5
3. ✔ 9
4. ✘ 11

Question Number : 114 Question Id : 2158571654 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

If $P(A) = \frac{4}{5}$ and $P(A \cap B) = \frac{7}{10}$, then find $P(B/A)$ is equal to

Options :

1. ✘ $\frac{1}{10}$
2. ✘ $\frac{1}{8}$
3. ✔ $\frac{7}{8}$

4. ✘ $\frac{17}{20}$

Question Number : 115 Question Id : 2158571655 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Find the equation of the plane which cuts the axes of x and y at (3,0,0) and (0,-2,0) and does not cut z-axis

Options :

1. ✔ $\frac{x}{3} - \frac{y}{2} = 1$

2. ✘ $\frac{x}{3} + \frac{y}{2} = 1$

3. ✘ $\frac{x}{2} - \frac{y}{3} = 1$

4. ✘ $\frac{x}{3} - \frac{y}{2} = -1$

Question Number : 116 Question Id : 2158571656 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The derivative of $\cos^{-1}(2x^2-1)$ w.r.t $\cos^{-1} x$ is

Options :

1. ✓ 2

2. ✗ $\frac{-1}{2\sqrt{1-x^2}}$

3. ✗ $\frac{2}{x}$

4. ✗ $1-x^2$

Question Number : 117 Question Id : 2158571657 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Let $A = \{1, 2, \{3, 4\}, 5\}$, which of the following statement is incorrect

Options :

1. ✗ $\{3, 4\} \in A$

2. ✓ $\{3, 4\} \subset A$

3. ✗ $\{\{3, 4\}\} \subset A$

4. ✗ $\Phi \subset A$

Question Number : 118 Question Id : 2158571658 Question Type : MCQ Option Shuffling : No

<https://exams.freshersnow.com/category/entrance-exam-question-papers/>

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Find the value of $\tan \frac{\pi}{8}$

Options :

1. ✘ $\sqrt{2} + 1$

2. ✘ $-\sqrt{2} - 1$

3. ✘ $-\sqrt{2} + 1$

4. ✔ $\sqrt{2} - 1$

Question Number : 119 Question Id : 2158571659 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

Roots of the Quadratic equation $x^2 + \frac{x}{\sqrt{2}} + 1 = 0$

Options :

1. ✘ $\frac{1 \pm \sqrt{7}i}{2\sqrt{2}}$

2. ✘ $\frac{1 \pm \sqrt{7}}{2\sqrt{2}}$

3. ✓ $\frac{-1 \pm \sqrt{7}i}{2\sqrt{2}}$

4. ✗ $\frac{-1 \pm \sqrt{7}}{2\sqrt{2}}$

Question Number : 120 Question Id : 2158571660 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

Correct Marks : 1 Wrong Marks : 0

The solution set of the inequation $3x+5y>13$ is

Options :

1. ✗ Half plane that contains Origin
2. ✓ Open half plane not containing origin
3. ✗ xy Plane except the points lying on $3x+5y=13$
4. ✗ Full Plane