

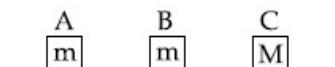
JEE MAIN 2019

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Roll No.	UP11300090
Test Date	09/01/2019
Test Time	9:30 AM - 12:30 PM
Subject	Paper I EH

Section : Physics

Q.1 Three blocks A, B and C are lying on a smooth horizontal surface, as shown in the figure. A and B have equal masses, m while C has mass M . Block A is given an initial speed v towards B due to which it collides with B perfectly inelastically. The combined mass collides with C, also

perfectly inelastically $\frac{5}{6}$ th of the initial kinetic energy is lost in whole process. What is value of M/m ?



Options 1. 4

- 2. 3
- 3. 2
- 4. 5

Question ID : 41652910049

Option 1 ID : 41652939655

Option 2 ID : 41652939654

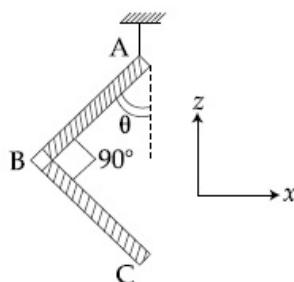
Option 3 ID : 41652939656

Option 4 ID : 41652939657

Status : Not Answered

Chosen Option : --

Q.2 An L-shaped object, made of thin rods of uniform mass density, is suspended with a string as shown in figure. If $AB = BC$, and the angle made by AB with downward vertical is θ , then :



- Options**
- 1. $\tan\theta = \frac{2}{\sqrt{3}}$
 - 2. $\tan\theta = \frac{1}{2\sqrt{3}}$
 - 3. $\tan\theta = \frac{1}{3}$
 - 4. $\tan\theta = \frac{1}{2}$

Question ID : 41652910050

Option 1 ID : 41652939660

Option 2 ID : 41652939661

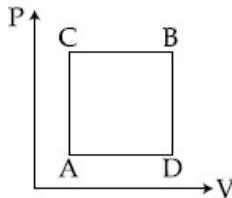
Option 3 ID : 41652939659

Option 4 ID : 41652939658

Status : Not Answered

Chosen Option : --

- Q.3** A gas can be taken from A to B via two different processes ACB and ADB.



When path ACB is used 60 J of heat flows into the system and 30 J of work is done by the system. If path ADB is used work done by the system is 10 J. The heat Flow into the system in path ADB is :

- Options**
- 1. 20 J
 - 2. 40 J
 - 3. 100 J
 - 4. 80 J

Question ID : 41652910055

Option 1 ID : 41652939679

Option 2 ID : 41652939681

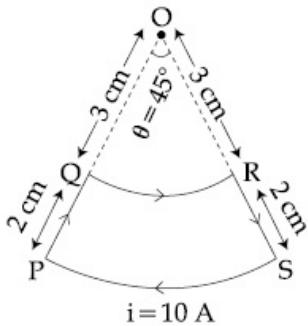
Option 3 ID : 41652939678

Option 4 ID : 41652939680

Status : Answered

Chosen Option : 2

- Q.4** A current loop, having two circular arcs joined by two radial lines is shown in the figure. It carries a current of 10 A. The magnetic field at point O will be close to :



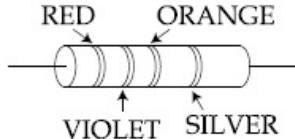
- Options**
- 1. 1.5×10^{-7} T
 - 2. 1.0×10^{-5} T
 - 3. 1.5×10^{-5} T
 - 4. 1.0×10^{-7} T

Question ID : 41652910064
Option 1 ID : 41652939715
Option 2 ID : 41652939716
Option 3 ID : 41652939714
Option 4 ID : 41652939717

Status : Answered

Chosen Option : 1

- Q.5** A resistance is shown in the figure. Its value and tolerance are given respectively by :



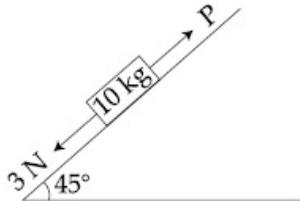
- Options**
- 1. $27 \text{ k}\Omega$, 10 %
 - 2. 270Ω , 5 %
 - 3. $27 \text{ k}\Omega$, 20 %
 - 4. 270Ω , 10 %

Question ID : 41652910075
Option 1 ID : 41652939759
Option 2 ID : 41652939758
Option 3 ID : 41652939760
Option 4 ID : 41652939761

Status : Not Answered

Chosen Option : --

- Q.6** A block of mass 10 kg is kept on a rough inclined plane as shown in the figure. A force of 3 N is applied on the block. The coefficient of static friction between the plane and the block is 0.6. What should be the minimum value of force P, such that the block does not move downward ?
(take $g = 10 \text{ ms}^{-2}$)



- Options 1. 18 N
2. 25 N
3. 32 N
4. 23 N

Question ID : 41652910048
Option 1 ID : 41652939653
Option 2 ID : 41652939650
Option 3 ID : 41652939651
Option 4 ID : 41652939652

Status : Answered

Chosen Option : 3

- Q.7** Drift speed of electrons, when 1.5 A of current flows in a copper wire of cross section 5 mm^2 , is v . If the electron density in copper is $9 \times 10^{28}/\text{m}^3$ the value of v in mm/s is close to (Take charge of electron to be $= 1.6 \times 10^{-19} \text{ C}$)

- Options 1. 0.2
2. 3
3. 2
4. 0.02

Question ID : 41652910062
Option 1 ID : 41652939708
Option 2 ID : 41652939706
Option 3 ID : 41652939707
Option 4 ID : 41652939709

Status : Not Attempted and Marked For Review

Chosen Option : --

- Q.8** A copper wire is stretched to make it 0.5% longer. The percentage change in its electrical resistance if its volume remains unchanged is :

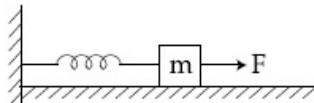
- Options 1. 2.5 %
2. 2.0 %

- 3. 0.5 %
- 4. 1.0 %

Question ID : 41652910046
Option 1 ID : 41652939644
Option 2 ID : 41652939645
Option 3 ID : 41652939642
Option 4 ID : 41652939643

Status : Answered
Chosen Option : 4

- Q.9** A block of mass m , lying on a smooth horizontal surface, is attached to a spring (of negligible mass) of spring constant k . The other end of the spring is fixed, as shown in the figure. The block is initially at rest in its equilibrium position. If now the block is pulled with a constant force F , the maximum speed of the block is :



- Options
- 1. $\frac{F}{\pi\sqrt{mk}}$
 - 2. $\frac{2F}{\sqrt{mk}}$
 - 3. $\frac{F}{\sqrt{mk}}$
 - 4. $\frac{\pi F}{\sqrt{mk}}$

Question ID : 41652910051
Option 1 ID : 41652939663
Option 2 ID : 41652939662
Option 3 ID : 41652939664
Option 4 ID : 41652939665

Status : Answered
Chosen Option : 3

- Q.10** A conducting circular loop made of a thin wire, has area $3.5 \times 10^{-3} \text{ m}^2$ and resistance 10Ω . It is placed perpendicular to a time dependent magnetic field $B(t) = (0.4T)\sin(50\pi t)$. The field is uniform in space. Then the net charge flowing through the loop during $t = 0 \text{ s}$ and $t = 10 \text{ ms}$ is close to :

- Options
- 1. 14 mC
 - 2. 21 mC
 - 3. 6 mC
 - 4. 7 mC

Question ID : 41652910067
Option 1 ID : 41652939728
Option 2 ID : 41652939729
Option 3 ID : 41652939726
Option 4 ID : 41652939727
Status : Answered
Chosen Option : 1

Q.11 A particle is moving with a velocity

$$\vec{v} = K(y \hat{i} + x \hat{j}), \text{ where } K \text{ is a constant.}$$

The general equation for its path is :

Options 1. $y^2 = x^2 + \text{constant}$

2. $y^2 = x + \text{constant}$

3. $xy = \text{constant}$

4. $y = x^2 + \text{constant}$

Question ID : 41652910047
Option 1 ID : 41652939646
Option 2 ID : 41652939648
Option 3 ID : 41652939649
Option 4 ID : 41652939647
Status : Answered
Chosen Option : 3

Q.12 A convex lens is put 10 cm from a light source and it makes a sharp image on a screen, kept 10 cm from the lens. Now a glass block (refractive index 1.5) of 1.5 cm thickness is placed in contact with the light source. To get the sharp image again, the screen is shifted by a distance d. Then d is :

Options 1. 0

2. 1.1 cm away from the lens

3. 0.55 cm away from the lens

4. 0.55 cm towards the lens

Question ID : 41652910069
Option 1 ID : 41652939734
Option 2 ID : 41652939737
Option 3 ID : 41652939736
Option 4 ID : 41652939735
Status : Answered
Chosen Option : 3

Q.13 A plane electromagnetic wave of frequency 50 MHz travels in free space along the positive x -direction. At a particular point in space and time, $\vec{E} = 6.3 \hat{j}$ V/m. The corresponding magnetic field \vec{B} , at that point will be :

Options

1. $18.9 \times 10^8 \hat{k}$ T
2. $18.9 \times 10^{-8} \hat{k}$ T
3. $6.3 \times 10^{-8} \hat{k}$ T
4. $2.1 \times 10^{-8} \hat{k}$ T

Question ID : 41652910068

Option 1 ID : 41652939732

Option 2 ID : 41652939733

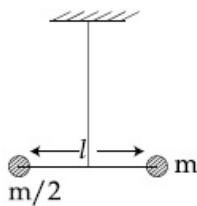
Option 3 ID : 41652939730

Option 4 ID : 41652939731

Status : Marked For Review

Chosen Option : 2

Q.14 Two masses m and $\frac{m}{2}$ are connected at the two ends of a massless rigid rod of length l . The rod is suspended by a thin wire of torsional constant k at the centre of mass of the rod-mass system(see figure). Because of torsional constant k , the restoring torque is $\tau = k\theta$ for angular displacement θ . If the rod is rotated by θ_0 and released, the tension in it when it passes through its mean position will be :



Options

1. $\frac{2k\theta_0^2}{l}$
2. $\frac{k\theta_0^2}{l}$
3. $\frac{k\theta_0^2}{2l}$
4. $\frac{3k\theta_0^2}{l}$

Question ID : 41652910057

Option 1 ID : 41652939688
Option 2 ID : 41652939687
Option 3 ID : 41652939686
Option 4 ID : 41652939689
Status : Answered
Chosen Option : 4

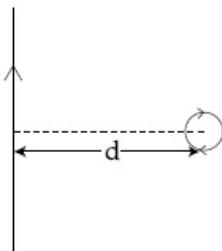
- Q.15** A rod, of length L at room temperature and uniform area of cross section A, is made of a metal having coefficient of linear expansion $\alpha/^\circ\text{C}$. It is observed that an external compressive force F, is applied on each of its ends, prevents any change in the length of the rod, when its temperature rises by $\Delta T \text{ K}$. Young's modulus, Y, for this metal is :

Options

1. $\frac{F}{A\alpha(\Delta T - 273)}$
2. $\frac{F}{2A\alpha\Delta T}$
3. $\frac{F}{A\alpha\Delta T}$
4. $\frac{2F}{A\alpha\Delta T}$

Question ID : 41652910053
Option 1 ID : 41652939670
Option 2 ID : 41652939672
Option 3 ID : 41652939671
Option 4 ID : 41652939673
Status : Answered
Chosen Option : 4

- Q.16** An infinitely long current carrying wire and a small current carrying loop are in the plane of the paper as shown. The radius of the loop is a and distance of its centre from the wire is d ($d \gg a$). If the loop applies a force F on the wire then :



Options

1. $F \propto \left(\frac{a}{d}\right)^2$
2. $F = 0$

3. $F \propto \left(\frac{a^2}{d^3}\right)$

4. $F \propto \left(\frac{a}{d}\right)$

Question ID : 41652910065

Option 1 ID : 41652939720

Option 2 ID : 41652939718

Option 3 ID : 41652939721

Option 4 ID : 41652939719

Status : Answered

Chosen Option : 3

Q.17 For a uniformly charged ring of radius R, the electric field on its axis has the largest magnitude at a distance h from its centre. Then value of h is :

Options 1. $R\sqrt{2}$

2. $\frac{R}{\sqrt{5}}$

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

4. R

Question ID : 41652910060

Option 1 ID : 41652939699

Option 2 ID : 41652939701

Option 3 ID : 41652939700

Option 4 ID : 41652939698

Status : Answered

Chosen Option : 3

Q.18 A bar magnet is demagnetized by inserting it inside a solenoid of length 0.2 m, 100 turns, and carrying a current of 5.2 A. The coercivity of the bar magnet is :

Options 1. 285 A/m

2. 2600 A/m

3. 1200 A/m

4. 520 A/m

Question ID : 41652910066

Option 1 ID : 41652939724

Option 2 ID : 41652939725

Option 3 ID : 41652939722

Option 4 ID : 41652939723

Status : Answered

Chosen Option : 2

Q.19 Three charges $+Q$, q , $+Q$ are placed respectively, at distance, 0, $d/2$ and d from the origin, on the x -axis. If the net force experienced by $+Q$, placed at $x=0$, is zero, then value of q is :

- Options 1. $+Q/2$
- 2. $-Q/2$
- 3. $+Q/4$
- 4. $-Q/4$

Question ID : 41652910059

Option 1 ID : 41652939696

Option 2 ID : 41652939697

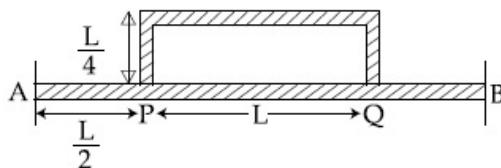
Option 3 ID : 41652939694

Option 4 ID : 41652939695

Status : Answered

Chosen Option : 4

Q.20 Temperature difference of 120°C is maintained between two ends of a uniform rod AB of length $2L$. Another bent rod PQ, of same cross-section as AB and length $\frac{3L}{2}$, is connected across AB (See figure). In steady state, temperature difference between P and Q will be close to :



- Options 1. 35°C
- 2. 75°C
- 3. 45°C
- 4. 60°C

Question ID : 41652910054

Option 1 ID : 41652939676

Option 2 ID : 41652939675

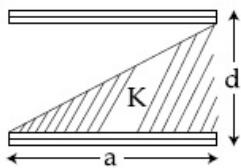
Option 3 ID : 41652939677

Option 4 ID : 41652939674

Status : Not Attempted and Marked For Review

Chosen Option : --

- Q.21** A parallel plate capacitor is made of two square plates of side 'a', separated by a distance d ($d < a$). The lower triangular portion is filled with a dielectric of dielectric constant K, as shown in the figure. Capacitance of this capacitor is :



Options

1. $\frac{K\epsilon_0 a^2}{d(K-1)} \ln K$
2. $\frac{K\epsilon_0 a^2}{2d(K+1)}$
3. $\frac{K\epsilon_0 a^2}{d} \ln K$
4. $\frac{1}{2} \frac{K\epsilon_0 a^2}{d}$

Question ID : 41652910061

Option 1 ID : 41652939705

Option 2 ID : 41652939704

Option 3 ID : 41652939703

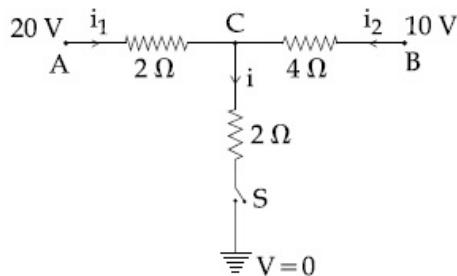
Option 4 ID : 41652939702

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.22

When the switch S, in the circuit shown, is closed, then the value of current i will be :



Options

1. 5 A
2. 3 A
3. 4 A
4. 2 A

Question ID : 41652910063

Option 1 ID : 41652939713

Option 2 ID : 41652939711

Option 3 ID : 41652939712

Option 4 ID : 41652939710

Status : Answered

Chosen Option : 1

Q.23

A heavy ball of mass M is suspended from the ceiling of a car by a light string of mass m ($m \ll M$). When the car is at rest, the speed of transverse waves in the string is 60 ms^{-1} . When the car has acceleration a , the wave-speed increases to 60.5 ms^{-1} . The value of a , in terms of gravitational acceleration g , is closest to :

Options

1. $\frac{g}{30}$
2. $\frac{g}{5}$
3. $\frac{g}{20}$
4. $\frac{g}{10}$

Question ID : 41652910058

Option 1 ID : 41652939693

Option 2 ID : 41652939691

Option 3 ID : 41652939692

Option 4 ID : 41652939690

Status : Not Attempted and Marked For Review

Chosen Option : --

- Q.24** Surface of certain metal is first illuminated with light of wavelength $\lambda_1 = 350 \text{ nm}$ and then, by light of wavelength $\lambda_2 = 540 \text{ nm}$. It is found that the maximum speed of the photo electrons in the two cases differ by a factor of 2. The work function of the metal (in eV) is close to :

$$(\text{Energy of photon} = \frac{1240}{\lambda(\text{in nm})} \text{eV})$$

Options 1. 2.5

- 2. 5.6
- 3. 1.4
- 4. 1.8

Question ID : 41652910072

Option 1 ID : 41652939749

Option 2 ID : 41652939747

Option 3 ID : 41652939748

Option 4 ID : 41652939746

Status : Answered

Chosen Option : 3

- Q.25** If the angular momentum of a planet of mass m , moving around the Sun in a circular orbit is L , about the center of the Sun, its areal velocity is :

Options 1. $\frac{2L}{m}$

2. $\frac{L}{2m}$

3. $\frac{L}{m}$

4. $\frac{4L}{m}$

Question ID : 41652910052

Option 1 ID : 41652939667

Option 2 ID : 41652939668

Option 3 ID : 41652939666

Option 4 ID : 41652939669

Status : Answered

Chosen Option : 3

- Q.26** Mobility of electrons in a semiconductor is defined as the ratio of their drift velocity to the applied electric field. If, for an n-type semiconductor, the density of electrons is 10^{19} m^{-3} and their mobility is $1.6 \text{ m}^2/(\text{V.s})$ then the resistivity of the semiconductor (since it is an n-type semiconductor contribution of holes is ignored) is close to :

Options 1. $0.2 \Omega\text{m}$

- 2. $0.4 \Omega m$
- 3. $4 \Omega m$
- 4. $2 \Omega m$

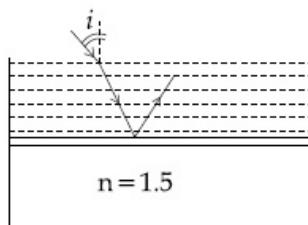
Question ID : 41652910074
Option 1 ID : 41652939754
Option 2 ID : 41652939757
Option 3 ID : 41652939756
Option 4 ID : 41652939755
Status : Not Attempted and Marked For Review
Chosen Option : --

Q.27 Two coherent sources produce waves of different intensities which interfere. After interference, the ratio of the maximum intensity to the minimum intensity is 16. The intensity of the waves are in the ratio :

- Options
- 1. 16 : 9
 - 2. 5 : 3
 - 3. 25 : 9
 - 4. 4 : 1

Question ID : 41652910070
Option 1 ID : 41652939739
Option 2 ID : 41652939741
Option 3 ID : 41652939740
Option 4 ID : 41652939738
Status : Answered
Chosen Option : 3

Q.28 Consider a tank made of glass (refractive index 1.5) with a thick bottom. It is filled with a liquid of refractive index μ . A student finds that, irrespective of what the incident angle i (see figure) is for a beam of light entering the liquid, the light reflected from the liquid-glass interface is never completely polarized. For this to happen, the minimum value of μ is :



- Options
- 1. $\sqrt{\frac{5}{3}}$
 - 2. $\frac{5}{\sqrt{3}}$

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

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

Question ID : 41652910071

Option 1 ID : 41652939745

Option 2 ID : 41652939744

Option 3 ID : 41652939743

Option 4 ID : 41652939742

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.29

A mixture of 2 moles of helium gas (atomic mass = 4 u), and 1 mole of argon gas (atomic mass = 40 u) is kept at 300 K in a container. The ratio of their rms speeds

$$\left[\frac{V_{rms}(\text{helium})}{V_{rms}(\text{argon})} \right], \text{ is close to :}$$

Options 1. 0.45

2. 0.32

3. 3.16

4. 2.24

Question ID : 41652910056

Option 1 ID : 41652939683

Option 2 ID : 41652939682

Option 3 ID : 41652939685

Option 4 ID : 41652939684

Status : Answered

Chosen Option : 4

Q.30

A sample of radioactive material A, that has an activity of 10 mCi (1 Ci = 3.7×10^{10} decays/s), has twice the number of nuclei as another sample of a different radioactive material B which has an activity of 20 mCi. The correct choices for half-lives of A and B would then be respectively :

Options 1. 20 days and 5 days

2. 5 days and 10 days

3. 10 days and 40 days

4. 20 days and 10 days

Question ID : 41652910073

Option 1 ID : 41652939751

Option 2 ID : 41652939752

Option 3 ID : 41652939753

Option 4 ID : 41652939750

Status : Not Answered

Chosen Option : --

Section : Chemistry

Q.1 The one that is extensively used as a piezoelectric material is :

Options 1. tridymite

2. quartz

3. amorphous silica

4. mica

Question ID : 41652910090

Option 1 ID : 41652939819

Option 2 ID : 41652939818

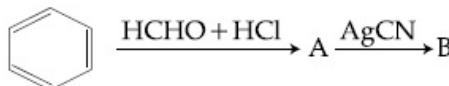
Option 3 ID : 41652939821

Option 4 ID : 41652939820

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.2 The compounds A and B in the following reaction are, respectively :



Options 1. A = Benzyl chloride, B = Benzyl

cyanide

2. A = Benzyl alcohol, B = Benzyl

cyanide

3. A = Benzyl chloride, B = Benzyl

isocyanide

4. A = Benzyl alcohol, B = Benzyl

isocyanide

Question ID : 41652910081

Option 1 ID : 41652939784

Option 2 ID : 41652939785

Option 3 ID : 41652939783

Option 4 ID : 41652939782

Status : Marked For Review

Chosen Option : 4

Q.3 The correct match between Item-I and Item-II is :

Item-I (drug)		Item-II (test)
A Chloroxylenol	P	Carbylamine test
B Norethindrone	Q	Sodium hydrogen-carbonate test
C Sulphapyridine	R	Ferric chloride test
D Penicillin	S	Bayer's test

Options 1. A→Q ; B→S ; C→P ; D→R

2. A→R ; B→S ; C→P ; D→Q
3. A→Q ; B→P ; C→S ; D→R
4. A→R ; B→P ; C→S ; D→Q

Question ID : 41652910084

Option 1 ID : 41652939796

Option 2 ID : 41652939797

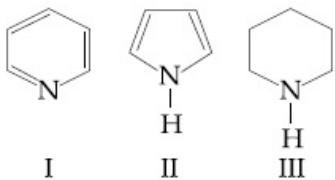
Option 3 ID : 41652939795

Option 4 ID : 41652939794

Status : Not Answered

Chosen Option : --

Q.4 Arrange the following amines in the decreasing order of basicity :



Options 1. I > III > II

2. III > II > I
3. III > I > II
4. I > II > III

Question ID : 41652910078

Option 1 ID : 41652939772

Option 2 ID : 41652939770

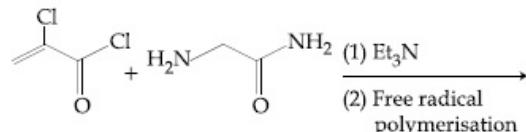
Option 3 ID : 41652939771

Option 4 ID : 41652939773

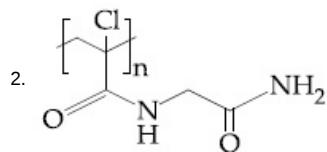
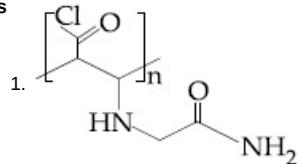
Status : Answered

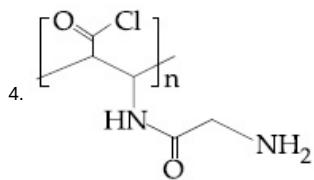
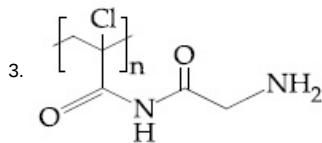
Chosen Option : 2

Q.5 Major product of the following reaction is :



Options





Question ID : 41652910076

Option 1 ID : 41652939764

Option 2 ID : 41652939763

Option 3 ID : 41652939762

Option 4 ID : 41652939765

Status : Answered

Chosen Option : 1

Q.6 The isotopes of hydrogen are :

- Options
- 1. Protium and deuterium only
 - 2. Deuterium and tritium only
 - 3. Protium, deuterium and tritium
 - 4. Tritium and protium only

Question ID : 41652910088

Option 1 ID : 41652939810

Option 2 ID : 41652939813

Option 3 ID : 41652939812

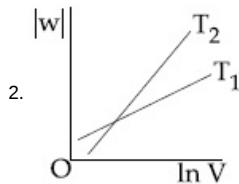
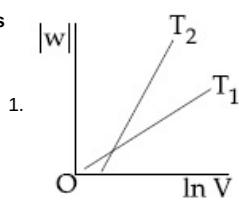
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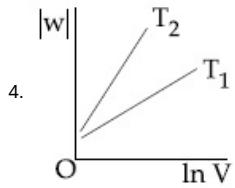
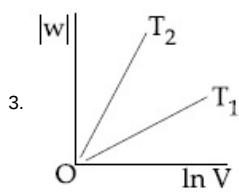
Status : Answered

Chosen Option : 3

Q.7 Consider the reversible isothermal expansion of an ideal gas in a closed system at two different temperatures T_1 and T_2 ($T_1 < T_2$). The correct graphical depiction of the dependence of work done (w) on the final volume (V) is :

Options





Question ID : 41652910100

Option 1 ID : 41652939861

Option 2 ID : 41652939860

Option 3 ID : 41652939859

Option 4 ID : 41652939858

Status : Answered

Chosen Option : 4

Q.8 Correct statements among a to d regarding silicones are :

- (a) They are polymers with hydrophobic character.
- (b) They are biocompatible.
- (c) In general, they have high thermal stability and low dielectric strength.
- (d) Usually, they are resistant to oxidation and used as greases.

Options 1. (a), (b) and (c) only

- 2. (a) and (b) only
- 3. (a), (b) and (d) only
- 4. (a), (b), (c) and (d)

Question ID : 41652910092

Option 1 ID : 41652939826

Option 2 ID : 41652939828

Option 3 ID : 41652939829

Option 4 ID : 41652939827

Status : Marked For Review

Chosen Option : 4

Q.9 For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number (\bar{v})

against $\left(\frac{1}{n^2}\right)$ will be (The Rydberg constant, R_H is in wave number unit)

Options 1. Linear with intercept $-R_H$

2. Linear with slope $-R_H$

3. Non linear

4. Linear with slope R_H

Question ID : 41652910098

Option 1 ID : 41652939850

Option 2 ID : 41652939851

Option 3 ID : 41652939852

Option 4 ID : 41652939853

Status : Answered

Chosen Option : 4

Q.10 The ore that contains both iron and copper is :

Options 1. malachite

2. azurite

3. copper pyrites

4. dolomite

Question ID : 41652910087

Option 1 ID : 41652939806

Option 2 ID : 41652939807

Option 3 ID : 41652939809

Option 4 ID : 41652939808

Status : Answered

Chosen Option : 3

Q.11 The following results were obtained during kinetic studies of the reaction ;



Experiment	[A] (in mol L ⁻¹)	[B] (in mol L ⁻¹)	Initial Rate of reaction (in mol L ⁻¹ min ⁻¹)
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

The time (in minutes) required to consume half of A is :

Options 1. 5

2. 100

3. 10

4. 1

Question ID : 41652910104

Option 1 ID : 41652939875

Option 2 ID : 41652939876

Option 3 ID : 41652939877

Option 4 ID : 41652939874

Status : Answered

Chosen Option : 3

Q.12 Which amongst the following is the strongest acid ?

Options 1. CHI_3

2. $\text{CH}(\text{CN})_3$

- 3. CHCl_3
- 4. CHBr_3

Question ID : 41652910083
Option 1 ID : 41652939792
Option 2 ID : 41652939793
Option 3 ID : 41652939790
Option 4 ID : 41652939791
Status : Not Attempted and Marked For Review
Chosen Option : --

- Q.13** In general, the properties that decrease and increase down a group in the periodic table, respectively, are :

Options

- 1. electron gain enthalpy and electronegativity.
- 2. electronegativity and electron gain enthalpy.
- 3. atomic radius and electronegativity.
- 4. electronegativity and atomic radius.

Question ID : 41652910086
Option 1 ID : 41652939805
Option 2 ID : 41652939803
Option 3 ID : 41652939804
Option 4 ID : 41652939802
Status : Answered
Chosen Option : 4

- Q.14** According to molecular orbital theory, which of the following is true with respect to Li_2^+ and Li_2^- ?

Options

- 1. Li_2^+ is stable and Li_2^- is unstable
- 2. Both are stable
- 3. Li_2^+ is unstable and Li_2^- is stable
- 4. Both are unstable

Question ID : 41652910099
Option 1 ID : 41652939855
Option 2 ID : 41652939857
Option 3 ID : 41652939856
Option 4 ID : 41652939854
Status : Answered
Chosen Option : 2

- Q.15** 20 mL of 0.1 M H_2SO_4 solution is added to 30 mL of 0.2 M NH_4OH solution. The pH of the resultant mixture is : [pk_b of $\text{NH}_4\text{OH} = 4.7$].

Options

- 1. 9.4
- 2. 9.0
- 3. 5.0

4. 5.2

Question ID : 41652910102

Option 1 ID : 41652939869

Option 2 ID : 41652939868

Option 3 ID : 41652939866

Option 4 ID : 41652939867

Status : Answered

Chosen Option : 3

Q.16 The correct decreasing order for acid strength is :

Options

1. $\text{CNCH}_2\text{COOH} > \text{O}_2\text{NCH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$
2. $\text{NO}_2\text{CH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{CNCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$
3. $\text{FCH}_2\text{COOH} > \text{NCCH}_2\text{COOH} > \text{NO}_2\text{CH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$
4. $\text{NO}_2\text{CH}_2\text{COOH} > \text{NCCH}_2\text{COOH} > \text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

Question ID : 41652910080

Option 1 ID : 41652939779

Option 2 ID : 41652939780

Option 3 ID : 41652939781

Option 4 ID : 41652939778

Status : Not Answered

Chosen Option : --

Q.17 The alkaline earth metal nitrate that does not crystallise with water molecules, is :

Options

1. $\text{Ca}(\text{NO}_3)_2$
2. $\text{Ba}(\text{NO}_3)_2$
3. $\text{Sr}(\text{NO}_3)_2$
4. $\text{Mg}(\text{NO}_3)_2$

Question ID : 41652910089

Option 1 ID : 41652939815

Option 2 ID : 41652939817

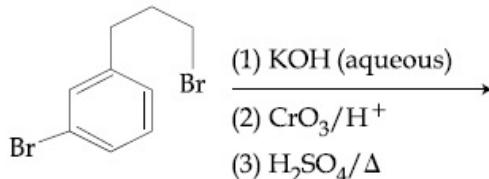
Option 3 ID : 41652939816

Option 4 ID : 41652939814

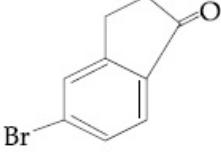
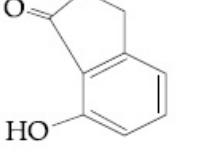
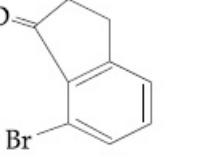
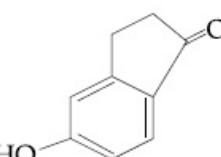
Status : Answered

Chosen Option : 4

Q.18 The major product of the following reaction is :



Options

1. 
2. 
3. 
4. 

Question ID : 41652910082

Option 1 ID : 41652939786

Option 2 ID : 41652939789

Option 3 ID : 41652939787

Option 4 ID : 41652939788

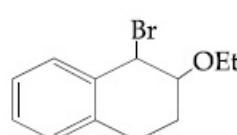
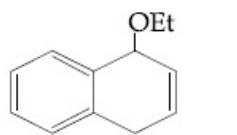
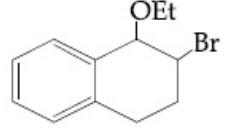
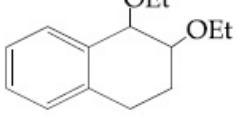
Status : Answered

Chosen Option : 1

Q.19 The major product of the following reaction is :



Options

1. 
2. 
3. 
4. 

Question ID : 41652910085

Option 1 ID : 41652939799

Option 2 ID : 41652939801

Option 3 ID : 41652939798

Option 4 ID : 41652939800

Status : Answered

Chosen Option : 3

- Q.20** A water sample has ppm level concentration of the following metals : Fe = 0.2 ; Mn = 5.0 ; Cu = 3.0 ; Zn = 5.0. The metal that makes the water sample unsuitable for drinking is :

Options

1. Cu
2. Zn
3. Fe
4. Mn

Question ID : 41652910095

Option 1 ID : 41652939840

Option 2 ID : 41652939841

Option 3 ID : 41652939838

Option 4 ID : 41652939839

Status : Not Answered

Chosen Option : --

- Q.21** Two complexes $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (A) and $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is :

Options

1. both absorb energies corresponding to their complementary colors.
2. Δ_0 values of (A) and (B) are calculated from the energies of violet and yellow light, respectively.
3. Δ_0 value for (A) is less than that of (B).
4. both are paramagnetic with three unpaired electrons.

Question ID : 41652910094

Option 1 ID : 41652939836

Option 2 ID : 41652939837

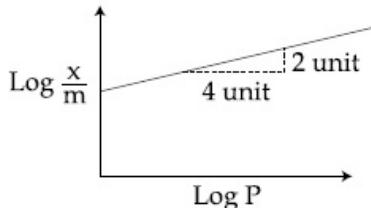
Option 3 ID : 41652939835

Option 4 ID : 41652939834

Status : Answered

Chosen Option : 4

- Q.22** Adsorption of a gas follows Freundlich adsorption isotherm. In the given plot, x is the mass of the gas adsorbed on mass m of the adsorbent at pressure p . $\frac{x}{m}$ is proportional to :



Options

1. $p^{1/2}$
2. p^2
3. $p^{1/4}$
4. p

Question ID : 41652910105

Option 1 ID : 41652939878

Option 2 ID : 41652939879

Option 3 ID : 41652939881

Option 4 ID : 41652939880

Status : Answered

Chosen Option : 1

- Q.23** 0.5 moles of gas A and x moles of gas B exert a pressure of 200 Pa in a container of volume 10 m^3 at 1000 K. Given R is the gas constant in $\text{JK}^{-1}\text{mol}^{-1}$, x is :

Options

1. $\frac{4 + R}{2R}$
2. $\frac{4 - R}{2R}$
3. $\frac{2R}{4 + R}$
4. $\frac{2R}{4 - R}$

Question ID : 41652910097

Option 1 ID : 41652939847

Option 2 ID : 41652939846

Option 3 ID : 41652939849

Option 4 ID : 41652939848

Status : Answered

Chosen Option : 2

- Q.24** The highest value of the calculated spin-only magnetic moment (in BM) among all the transition metal complexes is :

Options 1. 4.90

- 2. 5.92
- 3. 6.93
- 4. 3.87

Question ID : 41652910093

Option 1 ID : 41652939831

Option 2 ID : 41652939830

Option 3 ID : 41652939832

Option 4 ID : 41652939833

Status : Answered

Chosen Option : 2

Q.25 The increasing order of pKa of the following amino acids in aqueous solution is :

Gly Asp Lys Arg

Options 1. Gly < Asp < Arg < Lys

- 2. Asp < Gly < Arg < Lys
- 3. Arg < Lys < Gly < Asp
- 4. Asp < Gly < Lys < Arg

Question ID : 41652910077

Option 1 ID : 41652939766

Option 2 ID : 41652939769

Option 3 ID : 41652939768

Option 4 ID : 41652939767

Status : Not Answered

Chosen Option : --

Q.26 Aluminium is usually found in +3 oxidation state. In contrast, thallium exists in +1 and +3 oxidation states. This is due to :

Options 1. lanthanoid contraction

- 2. diagonal relationship
- 3. inert pair effect
- 4. lattice effect

Question ID : 41652910091

Option 1 ID : 41652939822

Option 2 ID : 41652939823

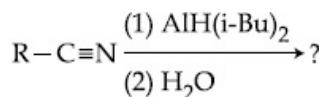
Option 3 ID : 41652939825

Option 4 ID : 41652939824

Status : Answered

Chosen Option : 3

Q.27 The major product of following reaction is :



Options 1. RCONH_2

2. RCHO

3. RCH_2NH_2

4. RCOOH

Question ID : 41652910079

Option 1 ID : 41652939775

Option 2 ID : 41652939777

Option 3 ID : 41652939774

Option 4 ID : 41652939776

Status : Marked For Review

Chosen Option : 3

Q.28 Which one of the following statements regarding Henry's law is not correct ?

Options Different gases have different K_H

1. (Henry's law constant) values at the same temperature.

The value of K_H increases with

2. increase of temperature and K_H is function of the nature of the gas

The partial pressure of the gas in

3. vapour phase is proportional to the mole fraction of the gas in the solution.

Higher the value of K_H at a given

4. pressure, higher is the solubility of the gas in the liquids.

Question ID : 41652910101

Option 1 ID : 41652939863

Option 2 ID : 41652939865

Option 3 ID : 41652939862

Option 4 ID : 41652939864

Status : Answered

Chosen Option : 2

Q.29 The anodic half-cell of lead-acid battery is recharged using electricity of 0.05 Faraday. The amount of PbSO_4 electrolyzed in g during the process is : (Molar mass of $\text{PbSO}_4 = 303 \text{ g mol}^{-1}$)

Options 1. 15.2

2. 11.4

3. 22.8

4. 7.6

Question ID : 41652910103

Option 1 ID : 41652939870

Option 2 ID : 41652939873

Option 3 ID : 41652939872

Option 4 ID : 41652939871

Status : Answered

Chosen Option : 4

Q.30 A solution of sodium sulfate contains 92 g of Na^+ ions per kilogram of water. The molality of Na^+ ions in that solution in mol kg^{-1} is :

- Options 1. 8
2. 16
3. 4
4. 12

Question ID : 41652910096

Option 1 ID : 41652939843

Option 2 ID : 41652939845

Option 3 ID : 41652939842

Option 4 ID : 41652939844

Status : Answered

Chosen Option : 1

Section : Mathematics

Q.1 For $x \in \mathbb{R} - \{0, 1\}$, let $f_1(x) = \frac{1}{x}$, $f_2(x) = 1 - x$

and $f_3(x) = \frac{1}{1-x}$ be three given functions. If a function, $J(x)$ satisfies $(f_2 \circ f_1)(x) = f_3(x)$ then $J(x)$ is equal to :

- Options 1. $\frac{1}{x} f_3(x)$
2. $f_3(x)$
3. $f_1(x)$
4. $f_2(x)$

Question ID : 41652910106

Option 1 ID : 41652939885

Option 2 ID : 41652939884

Option 3 ID : 41652939882

Option 4 ID : 41652939883

Status : Answered

Chosen Option : 2

Q.2 Let $0 < \theta < \frac{\pi}{2}$. If the eccentricity of the

hyperbola $\frac{x^2}{\cos^2 \theta} - \frac{y^2}{\sin^2 \theta} = 1$ is greater than 2, then the length of its latus rectum lies in the interval :

- Options 1. $(3/2, 2]$
2. $(3, \infty)$
3. $(2, 3]$

4. (1, 3/2]

Question ID : 41652910127
 Option 1 ID : 41652939967
 Option 2 ID : 41652939969
 Option 3 ID : 41652939968
 Option 4 ID : 41652939966
 Status : Answered
 Chosen Option : 2

Q.3 Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a function defined as

$$f(x) = \begin{cases} 5, & \text{if } x \leq 1 \\ a + bx, & \text{if } 1 < x < 3 \\ b + 5x, & \text{if } 3 \leq x < 5 \\ 30, & \text{if } x \geq 5 \end{cases}$$

Then, f is :

- Options**
1. continuous if $a = -5$ and $b = 10$
 2. continuous if $a = 5$ and $b = 5$
 3. continuous if $a = 0$ and $b = 5$
 4. not continuous for any values of a and b

Question ID : 41652910116
 Option 1 ID : 41652939922
 Option 2 ID : 41652939923
 Option 3 ID : 41652939924
 Option 4 ID : 41652939925
 Status : Answered
 Chosen Option : 4

Q.4

$$\lim_{y \rightarrow 0} \frac{\sqrt{1 + \sqrt{1 + y^4}} - \sqrt{2}}{y^4}$$

Options

1. exists and equals $\frac{1}{4\sqrt{2}}$
2. does not exist
3. exists and equals $\frac{1}{2\sqrt{2}(\sqrt{2} + 1)}$
4. exists and equals $\frac{1}{2\sqrt{2}}$

Question ID : 41652910115
 Option 1 ID : 41652939920
 Option 2 ID : 41652939918
 Option 3 ID : 41652939921
 Option 4 ID : 41652939919
 Status : Answered
 Chosen Option : 1

Q.5

If the fractional part of the number $\frac{2^{403}}{15}$ is

$\frac{k}{15}$, then k is equal to :

Options

1. 8
2. 14
3. 4
4. 6

Question ID : 41652910112

Option 1 ID : 41652939907

Option 2 ID : 41652939908

Option 3 ID : 41652939906

Option 4 ID : 41652939909

Status : Not Answered

Chosen Option : --

Q.6

Equation of a common tangent to the circle,
 $x^2 + y^2 - 6x = 0$ and the parabola, $y^2 = 4x$,
is :

Options

1. $\sqrt{3}y = x + 3$
2. $2\sqrt{3}y = 12x + 1$
3. $2\sqrt{3}y = -x - 12$
4. $\sqrt{3}y = 3x + 1$

Question ID : 41652910124

Option 1 ID : 41652939957

Option 2 ID : 41652939955

Option 3 ID : 41652939954

Option 4 ID : 41652939956

Status : Answered

Chosen Option : 1

Q.7

For any $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$, the expression

$3(\sin\theta - \cos\theta)^4 + 6(\sin\theta + \cos\theta)^2 + 4\sin^6\theta$
equals :

Options

1. $13 - 4 \cos^6\theta$
2. $13 - 4 \cos^2\theta + 6 \cos^4\theta$
3. $13 - 4 \cos^4\theta + 2\sin^2\theta\cos^2\theta$
4. $13 - 4 \cos^2\theta + 6\sin^2\theta\cos^2\theta$

Question ID : 41652910133

Option 1 ID : 41652939993

Option 2 ID : 41652939991

Option 3 ID : 41652939992

Option 4 ID : 41652939990

Status : Answered

Chosen Option : 1

Q.8 The area (in sq. units) bounded by the parabola $y = x^2 - 1$, the tangent at the point $(2, 3)$ to it and the y -axis is :

Options 1. $\frac{56}{3}$

2. $\frac{14}{3}$

3. $\frac{32}{3}$

4. $\frac{8}{3}$

Question ID : 41652910121

Option 1 ID : 41652939944

Option 2 ID : 41652939943

Option 3 ID : 41652939945

Option 4 ID : 41652939942

Status : Marked For Review

Chosen Option : 4

Q.9 Let $A = \left\{ 0 \in \left(-\frac{\pi}{2}, \pi\right) : \frac{3 + 2i \sin \theta}{1 - 2i \sin \theta} \text{ is} \right.$

purely imaginary } . Then the sum of the elements in A is :

Options 1. $\frac{3\pi}{4}$

2. π

3. $\frac{5\pi}{6}$

4. $\frac{2\pi}{3}$

Question ID : 41652910107

Option 1 ID : 41652939888

Option 2 ID : 41652939886

Option 3 ID : 41652939889

Option 4 ID : 41652939887

Status : Answered

Chosen Option : 4

Q.10 If a, b and c be three distinct real numbers in G.P. and $a + b + c = xb$, then x cannot be :

Options 1. -3

2. 4

3. 2

4. -2

Question ID : 41652910114

Option 1 ID : 41652939915

Option 2 ID : 41652939917

Option 3 ID : 41652939916

Option 4 ID : 41652939914

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.11

The value of $\int_0^{\pi} |\cos x|^3 dx$ is :

Options 1. 0

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

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

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

Question ID : 41652910120

Option 1 ID : 41652939938

Option 2 ID : 41652939940

Option 3 ID : 41652939939

Option 4 ID : 41652939941

Status : Not Answered

Chosen Option : --

Q.12

5 students of a class have an average height 150 cm and variance 18 cm². A new student, whose height is 156 cm, joined them. The variance (in cm²) of the height of these six students is :

Options 1. 16

2. 20

3. 18

4. 22

Question ID : 41652910131

Option 1 ID : 41652939983

Option 2 ID : 41652939982

Option 3 ID : 41652939984

Option 4 ID : 41652939985

Status : Not Answered

Chosen Option : --

Q.13

If $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, then the matrix

A^{-50} when $\theta = \frac{\pi}{12}$, is equal to :

Options

1. $\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

2. $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

3. $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

4. $\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

Question ID : 41652910109

Option 1 ID : 41652939897

Option 2 ID : 41652939894

Option 3 ID : 41652939895

Option 4 ID : 41652939896

Status : Answered

Chosen Option : 3

Q.14

Let a_1, a_2, \dots, a_{30} be an A.P., $S = \sum_{i=1}^{30} a_i$ and

$$T = \sum_{i=1}^{15} a_{(2i-1)}. \text{ If } a_5 = 27 \text{ and } S - 2T = 75,$$

then a_{10} is equal to :

Options 1. 57

2. 47

3. 42

4. 52

Question ID : 41652910113

Option 1 ID : 41652939912

Option 2 ID : 41652939911

Option 3 ID : 41652939910

Option 4 ID : 41652939913

Status : Answered

Chosen Option : 4

Q.15 The system of linear equations

$$x + y + z = 2$$

$$2x + 3y + 2z = 5$$

$$2x + 3y + (a^2 - 1)z = a + 1$$

Options 1. is inconsistent when $a = 4$

2. has infinitely many solutions for $a = 4$

3. is inconsistent when $|a| = \sqrt{3}$

4. has a unique solution for $|a| = \sqrt{3}$

Question ID : 41652910110
Option 1 ID : 41652939900
Option 2 ID : 41652939899
Option 3 ID : 41652939898
Option 4 ID : 41652939901
Status : Answered
Chosen Option : 3

- Q.16** Three circles of radii a, b, c ($a < b < c$) touch each other externally. If they have x -axis as a common tangent, then :

Options

1. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$
2. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ are in A.P.
3. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$
4. a, b, c are in A.P.

Question ID : 41652910125
Option 1 ID : 41652939961
Option 2 ID : 41652939959
Option 3 ID : 41652939960
Option 4 ID : 41652939958
Status : Not Answered
Chosen Option : --

- Q.17** Consider the set of all lines $px + qy + r = 0$ such that $3p + 2q + 4r = 0$. Which one of the following statements is true ?

Options

1. The lines are not concurrent.
2. The lines are all parallel.
3. Each line passes through the origin.

The lines are concurrent at the point

4. $\left(\frac{3}{4}, \frac{1}{2}\right)$.

Question ID : 41652910123
Option 1 ID : 41652939952
Option 2 ID : 41652939950
Option 3 ID : 41652939953
Option 4 ID : 41652939951
Status : Answered
Chosen Option : 4

- Q.18** Consider a class of 5 girls and 7 boys. The number of different teams consisting of 2 girls and 3 boys that can be formed from this class, if there are two specific boys A and B, who refuse to be the members of the same team, is :

Options

1. 300
2. 200

- 3. 350
- 4. 500

Question ID : 41652910111

Option 1 ID : 41652939903

Option 2 ID : 41652939902

Option 3 ID : 41652939904

Option 4 ID : 41652939905

Status : Answered

Chosen Option : 1

- Q.19** If θ denotes the acute angle between the curves, $y=10-x^2$ and $y=2+x^2$ at a point of their intersection, then $|\tan \theta|$ is equal to :

Options

- 1. $\frac{7}{17}$
- 2. $\frac{4}{9}$
- 3. $\frac{8}{15}$
- 4. $\frac{8}{17}$

Question ID : 41652910117

Option 1 ID : 41652939929

Option 2 ID : 41652939928

Option 3 ID : 41652939927

Option 4 ID : 41652939926

Status : Answered

Chosen Option : 3

- Q.20** For $x^2 \neq n\pi + 1$, $n \in \mathbb{N}$ (the set of natural numbers), the integral

$$\int x \sqrt{\frac{2 \sin(x^2 - 1) - \sin 2(x^2 - 1)}{2 \sin(x^2 - 1) + \sin 2(x^2 - 1)}} dx \text{ is}$$

equal to :

(where c is a constant of integration)

Options

- 1. $\frac{1}{2} \log_e \left| \sec^2 \left(\frac{x^2 - 1}{2} \right) \right| + c$
- 2. $\log_e \left| \sec \left(\frac{x^2 - 1}{2} \right) \right| + c$
- 3. $\frac{1}{2} \log_e |\sec(x^2 - 1)| + c$
- 4. $\log_e \left| \frac{1}{2} \sec^2(x^2 - 1) \right| + c$

Question ID : 41652910119

Option 1 ID : 41652939937

Option 2 ID : 41652939935
Option 3 ID : 41652939934
Option 4 ID : 41652939936
Status : Answered
Chosen Option : 2

- Q.21** If $y = y(x)$ is the solution of the differential equation, $x \frac{dy}{dx} + 2y = x^2$ satisfying $y(1) = 1$, then $y\left(\frac{1}{2}\right)$ is equal to :

Options

1. $\frac{7}{64}$
2. $\frac{13}{16}$
3. $\frac{1}{4}$
4. $\frac{49}{16}$

Question ID : 41652910122
Option 1 ID : 41652939947
Option 2 ID : 41652939948
Option 3 ID : 41652939946
Option 4 ID : 41652939949
Status : Answered
Chosen Option : 4

- Q.22** Axis of a parabola lies along x -axis. If its vertex and focus are at distances 2 and 4 respectively from the origin, on the positive x -axis then which of the following points does not lie on it ?

Options

1. $(6, 4\sqrt{2})$
2. $(4, -4)$
3. $(5, 2\sqrt{6})$
4. $(8, 6)$

Question ID : 41652910126
Option 1 ID : 41652939963
Option 2 ID : 41652939962
Option 3 ID : 41652939964
Option 4 ID : 41652939965
Status : Answered
Chosen Option : 4

- Q.23** The plane through the intersection of the planes $x + y + z = 1$ and $2x + 3y - z + 4 = 0$ and parallel to y -axis also passes through the point :

Options

1. $(3, 2, 1)$

- 2. $(-3, 0, -1)$
- 3. $(3, 3, -1)$
- 4. $(-3, 1, 1)$

Question ID : 41652910128

Option 1 ID : 41652939972

Option 2 ID : 41652939970

Option 3 ID : 41652939973

Option 4 ID : 41652939971

Status : Answered

Chosen Option : 2

Q.24 If the Boolean expression

$(p \oplus q) \wedge (\sim p \odot q)$ is equivalent to
 $p \wedge q$, where $\oplus, \odot \in \{\wedge, \vee\}$, then the
ordered pair (\oplus, \odot) is :

Options 1. (\vee, \vee)

2. (\wedge, \vee)

3. (\vee, \wedge)

4. (\wedge, \wedge)

Question ID : 41652910135

Option 1 ID : 41652940000

Option 2 ID : 41652939999

Option 3 ID : 41652940001

Option 4 ID : 41652939998

Status : Not Answered

Chosen Option : --

Q.25 Let α and β be two roots of the equation
 $x^2 + 2x + 2 = 0$, then $\alpha^{15} + \beta^{15}$ is equal to :

Options 1. 512

2. - 256

3. - 512

4. 256

Question ID : 41652910108

Option 1 ID : 41652939892

Option 2 ID : 41652939891

Option 3 ID : 41652939893

Option 4 ID : 41652939890

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.26 The maximum volume (in cu.m) of the right
circular cone having slant height 3 m is :

Options 1. $\frac{4}{3}\pi$

2. 6π

3. $2\sqrt{3} \pi$

4. $3\sqrt{3} \pi$

Question ID : 41652910118

Option 1 ID : 41652939933

Option 2 ID : 41652939930

Option 3 ID : 41652939932

Option 4 ID : 41652939931

Status : Answered

Chosen Option : 3

Q.27

If $\cos^{-1}\left(\frac{2}{3x}\right) + \cos^{-1}\left(\frac{3}{4x}\right) = \frac{\pi}{2}$ ($x > \frac{3}{4}$) ,

then x is equal to :

Options

1. $\frac{\sqrt{145}}{12}$

2. $\frac{\sqrt{145}}{11}$

3. $\frac{\sqrt{146}}{12}$

4. $\frac{\sqrt{145}}{10}$

Question ID : 41652910134

Option 1 ID : 41652939994

Option 2 ID : 41652939996

Option 3 ID : 41652939995

Option 4 ID : 41652939997

Status : Answered

Chosen Option : 1

Q.28

Let $\vec{a} = \hat{i} - \hat{j}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ and \vec{c}

be a vector such that $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$

and $\vec{a} \cdot \vec{c} = 4$, then $|\vec{c}|^2$ is equal to :

Options

1. $\frac{19}{2}$

2. $\frac{17}{2}$

3. 9

4. 8

Question ID : 41652910130

Option 1 ID : 41652939978

Option 2 ID : 41652939979

Option 3 ID : 41652939980

Option 4 ID : 41652939981

Status : Answered

Chosen Option : 2

- Q.29** The equation of the line passing through $(-4, 3, 1)$, parallel to the plane $x + 2y - z - 5 = 0$ and intersecting the line

$$\frac{x+1}{-3} = \frac{y-3}{2} = \frac{z-2}{-1} \text{ is:}$$

- Options**
- 1. $\frac{x+4}{3} = \frac{y-3}{-1} = \frac{z-1}{1}$
 - 2. $\frac{x+4}{1} = \frac{y-3}{1} = \frac{z-1}{3}$
 - 3. $\frac{x+4}{-1} = \frac{y-3}{1} = \frac{z-1}{1}$
 - 4. $\frac{x-4}{2} = \frac{y+3}{1} = \frac{z+1}{4}$

Question ID : 41652910129

Option 1 ID : 41652939976

Option 2 ID : 41652939975

Option 3 ID : 41652939974

Option 4 ID : 41652939977

Status : Not Attempted and Marked For Review

Chosen Option : --

- Q.30** Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Let X denote the random variable of number of aces obtained in the two drawn cards. Then $P(X=1) + P(X=2)$ equals :

- Options**
- 1. $24/169$
 - 2. $52/169$
 - 3. $49/169$
 - 4. $25/169$

Question ID : 41652910132

Option 1 ID : 41652939986

Option 2 ID : 41652939989

Option 3 ID : 41652939988

Option 4 ID : 41652939987

Status : Answered

Chosen Option : 4