JEE MAIN 2019

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

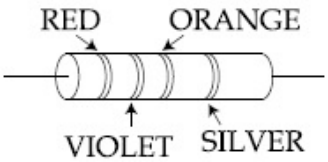
Section : **Physics**

Q.1 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. 1.1 cm away from the lens
2. 0
3. 0.55 cm towards the lens
4. 0.55 cm away from the lens

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

Q.2 A resistance is shown in the figure. Its value and tolerance are given respectively by :



Options
1. 270 Ω, 10 %
2. 27 kΩ, 10 %
3. 27 kΩ, 20 %
4. 270 Ω, 5 %

Question ID : **41652910075**
Option 1 ID : **41652939761**
Option 2 ID : **41652939759**
Option 3 ID : **41652939760**
Option 4 ID : **41652939758**
Status : **Not Answered**
Chosen Option : **--**

Q.3

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 $9\times10^{28}/m^3$ the value of v in mm/s is close to (Take charge of electron to be $=1.6\times10^{-19}$ C)

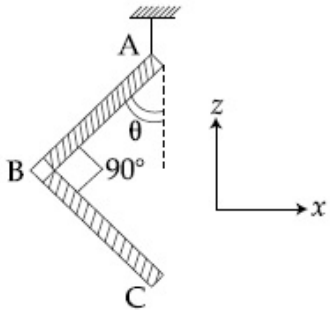
Options

1. 0.02
2. 3
3. 2
4. 0.2

Question ID : **41652910062**
Option 1 ID : **41652939709**
Option 2 ID : **41652939706**
Option 3 ID : **41652939707**
Option 4 ID : **41652939708**
Status : **Answered**
Chosen Option : **1**

Q.4

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

Question ID : **41652910050**
Option 1 ID : **41652939661**
Option 2 ID : **41652939658**
Option 3 ID : **41652939660**
Option 4 ID : **41652939659**
Status : **Not Answered**
Chosen Option : **--**

Q.5

A particle is moving with a velocity $\vec{v} = K(y\hat{i} + x\hat{j})$, where K is a constant. The general equation for its path is :

Options

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

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

Q.6

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

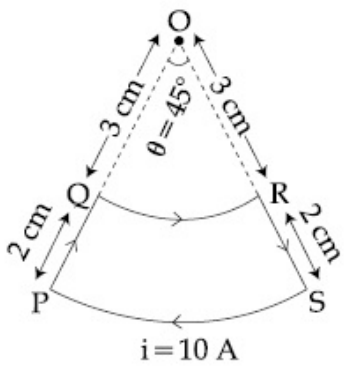
Options

1. 3.16
2. 0.32
3. 0.45
4. 2.24

Question ID : **41652910056**
Option 1 ID : **41652939685**
Option 2 ID : **41652939682**
Option 3 ID : **41652939683**
Option 4 ID : **41652939684**
Status : **Answered**
Chosen Option : **2**

Q.7

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. 1.0×10^{-7} T

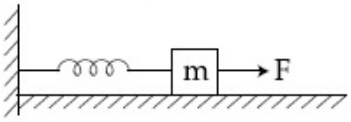
2. 1.5×10^{-7} T

3. 1.5×10^{-5} T

4. 1.0×10^{-5} T

Question ID : **41652910064**
Option 1 ID : **41652939717**
Option 2 ID : **41652939715**
Option 3 ID : **41652939714**
Option 4 ID : **41652939716**
Status : **Answered**
Chosen Option : **3**

Q.8 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 initally 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. $\frac{2F}{\sqrt{mk}}$

2. $\frac{F}{\pi\sqrt{mk}}$

3. $\frac{\pi F}{\sqrt{mk}}$

4. $\frac{F}{\sqrt{mk}}$

Question ID : **41652910051**
Option 1 ID : **41652939662**
Option 2 ID : **41652939663**
Option 3 ID : **41652939665**
Option 4 ID : **41652939664**
Status : **Answered**
Chosen Option : **1**

Q.9 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. $\frac{R}{\sqrt{5}}$

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

3. R

4. $R\sqrt{2}$

Question ID : **41652910060**
Option 1 ID : **41652939701**
Option 2 ID : **41652939700**
Option 3 ID : **41652939698**
Option 4 ID : **41652939699**
Status : **Answered**
Chosen Option : **3**

Q.10

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. $25:9$
3. $4:1$
4. $5:3$

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

Q.11

Surface of certain metal is first illuminated with light of wavelength $\lambda_1 = 350$ nm and then, by light of wavelength $\lambda_2 = 540$ 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 :

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

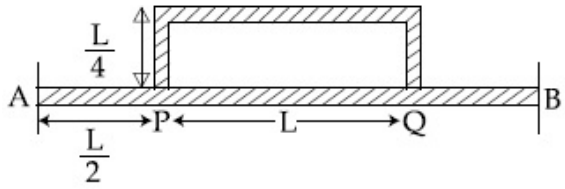
Options

1. 1.8
2. 2.5
3. 5.6
4. 1.4

Question ID : **41652910072**
Option 1 ID : **41652939746**
Option 2 ID : **41652939749**
Option 3 ID : **41652939747**
Option 4 ID : **41652939748**
Status : **Answered**
Chosen Option : **2**

Q.12

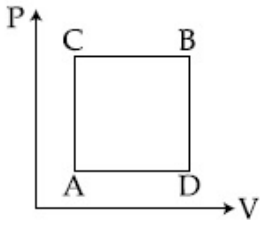
Temperature difference of 120°C is maintained between two ends of a uniform rod AB of length 2L. Another bent rod PQ, of same cross-section as AB and length $\frac{3L}{2}$, is connected across AB (See figure). In steady state, temperature difference between P and Q will be close to :



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

Question ID : **41652910054**
Option 1 ID : **41652939677**
Option 2 ID : **41652939675**
Option 3 ID : **41652939674**
Option 4 ID : **41652939676**
Status : **Answered**
Chosen Option : **4**

Q.13 A gas can be taken from A to B via two different processes ACB and ADB.

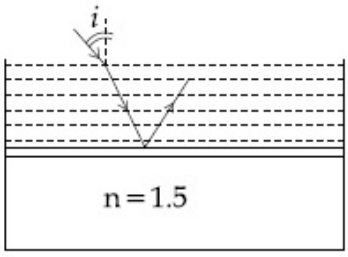


When path ACB is used 60 J of heat flows into the system and 30 J of work is done by the system. If path ADB is used work done by the system is 10 J. The heat Flow into the system in path ADB is :

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

Question ID : **41652910055**
Option 1 ID : **41652939681**
Option 2 ID : **41652939680**
Option 3 ID : **41652939678**
Option 4 ID : **41652939679**
Status : **Answered**
Chosen Option : **4**

Q.14 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. $\frac{3}{\sqrt{5}}$
3. $\frac{5}{\sqrt{3}}$
4. $\frac{4}{3}$

Question ID : **41652910071**
Option 1 ID : **41652939745**
Option 2 ID : **41652939743**
Option 3 ID : **41652939744**
Option 4 ID : **41652939742**
Status : **Not Answered**
Chosen Option : **--**

Q.15 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 $1.6\,m^2/(V.s)$ then the resistivity of the semiconductor (since it is an n-type semiconductor contribution of holes is ignored) is close to :

Options

1. $2\,\Omega m$
2. $4\,\Omega m$
3. $0.4\,\Omega m$
4. $0.2\,\Omega m$

Question ID : **41652910074**
Option 1 ID : **41652939755**
Option 2 ID : **41652939756**
Option 3 ID : **41652939757**
Option 4 ID : **41652939754**
Status : **Answered**

Chosen Option : **3**

Q.16 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. $2.1 \times 10^{-8}\ \hat{k}$T
3. $6.3 \times 10^{-8}\ \hat{k}$T
4. $18.9 \times 10^{8}\ \hat{k}$T

Question ID : **41652910068**
Option 1 ID : **41652939733**
Option 2 ID : **41652939731**
Option 3 ID : **41652939730**
Option 4 ID : **41652939732**
Status : **Answered**
Chosen Option : **4**

Q.17 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. $-Q/4$
2. $+Q/2$
3. $+Q/4$
4. $-Q/2$

Question ID : **41652910059**
Option 1 ID : **41652939695**
Option 2 ID : **41652939696**
Option 3 ID : **41652939694**
Option 4 ID : **41652939697**
Status : **Answered**
Chosen Option : **1**

Q.18 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. 2.0 %
2. 2.5 %
3. 1.0 %
4. 0.5 %

Question ID : **41652910046**
Option 1 ID : **41652939645**
Option 2 ID : **41652939644**
Option 3 ID : **41652939643**
Option 4 ID : **41652939642**
Status : **Answered**
Chosen Option : **1**

Q.19 A sample of radioactive material A, that has an activity of 10 mCi($1\ \text{Ci} = 3.7 \times 10^{10}$ 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. 5 days and 10 days
2. 10 days and 40 days
3. 20 days and 5 days
4. 20 days and 10 days

Question ID : **41652910073**
Option 1 ID : **41652939752**
Option 2 ID : **41652939753**
Option 3 ID : **41652939751**
Option 4 ID : **41652939750**
Status : **Not Answered**
Chosen Option : **--**

Q.20 A heavy ball of mass M is suspended from the ceiling of a car by a light string of mass m (m<<M). When the car is at rest, the speed of transverse waves in the string is $60\ \text{ms}^{-1}$. When the car has acceleration a, the wave-speed increases to $60.5\ \text{ms}^{-1}$. The value of a, in terms of gravitational acceleration g, is closest to :

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

Question ID : **41652910058**
Option 1 ID : **41652939693**
Option 2 ID : **41652939691**
Option 3 ID : **41652939690**
Option 4 ID : **41652939692**
Status : **Answered**
Chosen Option : **2**

Q.21

A conducting circular loop made of a thin wire, has area $3.5\times10^{-3}\ m^2$ and resistance $10\ \Omega$. 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 $t=0$ s and $t=10$ ms is close to :

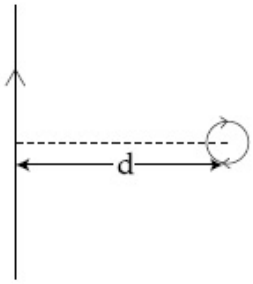
Options

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

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

Q.22

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>>a). If the loop applies a force F on the wire then :



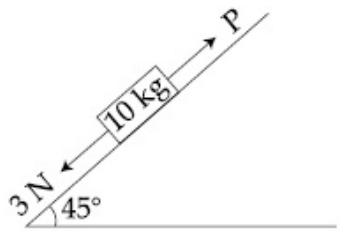
Options

1. $F=0$
2. $F\propto\left(\frac{a}{d}\right)$
3. $F\propto\left(\frac{a^2}{d^3}\right)$
4. $F\propto\left(\frac{a}{d}\right)^2$

Question ID : **41652910065**
Option 1 ID : **41652939718**
Option 2 ID : **41652939719**
Option 3 ID : **41652939721**
Option 4 ID : **41652939720**
Status : **Answered**
Chosen Option : **2**

Q.23

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 doesnot move downward ?
(take $g = 10\ ms^{-2}$)

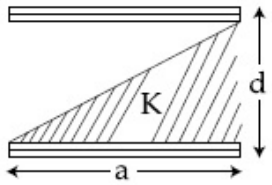


Options

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

Question ID : **41652910048**
Option 1 ID : **41652939651**
Option 2 ID : **41652939653**
Option 3 ID : **41652939652**
Option 4 ID : **41652939650**
Status : **Answered**
Chosen Option : **2**

Q.24 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. $\frac{K\epsilon_0 a^2}{2d(K+1)}$
2. $\frac{K\epsilon_0 a^2}{d(K-1)}\ln K$
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 : **41652939704**
Option 2 ID : **41652939705**
Option 3 ID : **41652939703**

Option 4 ID : **41652939702**
Status : **Answered**
Chosen Option : **2**

Q.25 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 $\alpha/°C$. 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 ΔT K. Young's modulus, Y, for this metal is :

Options

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

Question ID : **41652910053**
Option 1 ID : **41652939671**
Option 2 ID : **41652939670**
Option 3 ID : **41652939672**
Option 4 ID : **41652939673**
Status : **Not Answered**
Chosen Option : **--**

Q.26 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 :

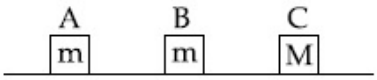
Options

1. 285 A/m
2. 2600 A/m
3. 520 A/m
4. 1200 A/m

Question ID : **41652910066**
Option 1 ID : **41652939724**
Option 2 ID : **41652939725**
Option 3 ID : **41652939723**
Option 4 ID : **41652939722**
Status : **Answered**
Chosen Option : **4**

Q.27

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 inital 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 ?



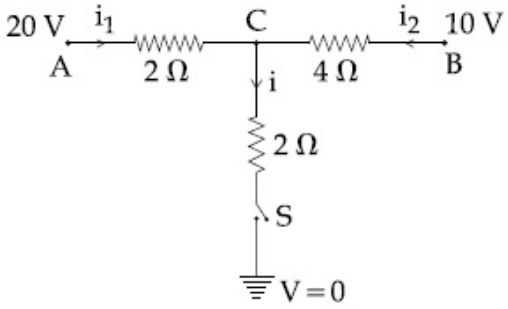
Options

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

Question ID : **41652910049**
Option 1 ID : **41652939657**
Option 2 ID : **41652939656**
Option 3 ID : **41652939655**
Option 4 ID : **41652939654**
Status : **Answered**
Chosen Option : **2**

Q.28

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



Options

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

Question ID : **41652910063**
Option 1 ID : **41652939711**
Option 2 ID : **41652939713**
Option 3 ID : **41652939712**
Option 4 ID : **41652939710**
Status : **Answered**
Chosen Option : **4**

Q.29

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 :

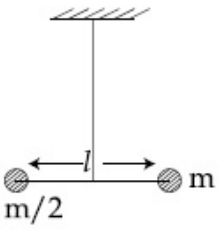
Options

1. $\frac{L}{m}$
2. $\frac{4L}{m}$
3. $\frac{L}{2m}$
4. $\frac{2L}{m}$

Question ID : **41652910052**
Option 1 ID : **41652939666**
Option 2 ID : **41652939669**
Option 3 ID : **41652939668**
Option 4 ID : **41652939667**
Status : **Answered**
Chosen Option : **3**

Q.30

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

Question ID : **41652910057**
Option 1 ID : **41652939689**
Option 2 ID : **41652939688**
Option 3 ID : **41652939687**
Option 4 ID : **41652939686**

Status : **Not Answered**
Chosen Option : **--**

Section : **Chemistry**

Q.1 Two complexes $[Cr(H_2O)_6]Cl_3$ (A) and $[Cr(NH_3)_6]Cl_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is :

Options

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

Question ID : **41652910094**
Option 1 ID : **41652939837**
Option 2 ID : **41652939834**
Option 3 ID : **41652939836**
Option 4 ID : **41652939835**
Status : **Answered**
Chosen Option : **1**

Q.2 The correct decreasing order for acid strength is :

Options

1. $NO_2CH_2COOH > FCH_2COOH > CNCH_2COOH > ClCH_2COOH$
2. $FCH_2COOH > NCCH_2COOH > NO_2CH_2COOH > ClCH_2COOH$
3. $CNCH_2COOH > O_2NCH_2COOH > FCH_2COOH > ClCH_2COOH$
4. $NO_2CH_2COOH > NCCH_2COOH > FCH_2COOH > ClCH_2COOH$

Question ID : **41652910080**
Option 1 ID : **41652939780**
Option 2 ID : **41652939781**
Option 3 ID : **41652939779**
Option 4 ID : **41652939778**
Status : **Not Answered**
Chosen Option : **--**

Q.3 The major product of following reaction is :

$$R-C\equiv N \xrightarrow[(2)\ H_2O]{(1)\ AlH(i\text{-}Bu)_2} ?$$

Options

1. $RCOOH$
2. $RCONH_2$

3. RCHO

4. RCH_2NH_2

Question ID : **41652910079**
Option 1 ID : **41652939776**
Option 2 ID : **41652939775**
Option 3 ID : **41652939777**
Option 4 ID : **41652939774**
Status : **Answered**
Chosen Option : **3**

Q.4 The highest value of the calculated spin-only magnetic moment (in BM) among all the transition metal complexes is :

Options

1. 5.92

2. 6.93

3. 3.87

4. 4.90

Question ID : **41652910093**
Option 1 ID : **41652939830**
Option 2 ID : **41652939832**
Option 3 ID : **41652939833**
Option 4 ID : **41652939831**
Status : **Answered**
Chosen Option : **3**

Q.5 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 $JK^{-1}mol^{-1}$, x is :

Options

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

2. $\frac{2R}{4-R}$

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

4. $\frac{4-R}{2R}$

Question ID : **41652910097**
Option 1 ID : **41652939849**
Option 2 ID : **41652939848**
Option 3 ID : **41652939847**
Option 4 ID : **41652939846**
Status : **Answered**
Chosen Option : **3**

Q.6 The one that is extensively used as a piezoelectric material is :

Options

1. tridymite

2. amorphous silica

3. quartz

4. mica

Question ID : **41652910090**
Option 1 ID : **41652939819**
Option 2 ID : **41652939821**
Option 3 ID : **41652939818**
Option 4 ID : **41652939820**
Status : **Answered**
Chosen Option : **4**

Q.7 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.

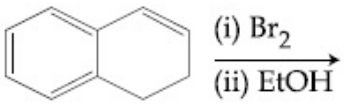
(d) Usually, they are resistant to oxidation and used as greases.

Options

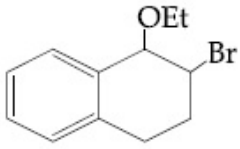
1. (a), (b), (c) and (d)
2. (a), (b) and (c) only
3. (a) and (b) only
4. (a), (b) and (d) only

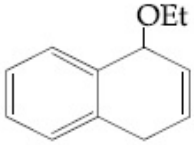
Question ID : **41652910092**
Option 1 ID : **41652939827**
Option 2 ID : **41652939826**
Option 3 ID : **41652939828**
Option 4 ID : **41652939829**
Status : **Answered**
Chosen Option : **2**

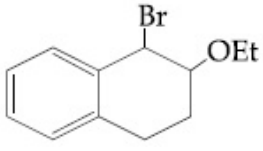
Q.8 The major product of the following reaction is :

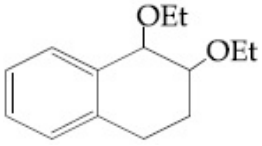


Options

1. 

2. 

3. 

4. 

Question ID : **41652910085**
Option 1 ID : **41652939798**
Option 2 ID : **41652939801**
Option 3 ID : **41652939799**
Option 4 ID : **41652939800**
Status : **Answered**
Chosen Option : **3**

Q.9 In general, the properties that decrease and increase down a group in the periodic table, respectively, are :

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

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

Q.10 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. 12
2. 4
3. 8
4. 16

Question ID : **41652910096**
Option 1 ID : **41652939844**
Option 2 ID : **41652939842**
Option 3 ID : **41652939843**
Option 4 ID : **41652939845**
Status : **Answered**
Chosen Option : **3**

Q.11

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

Question ID : **41652910084**
Option 1 ID : **41652939794**
Option 2 ID : **41652939796**
Option 3 ID : **41652939797**
Option 4 ID : **41652939795**
Status : **Answered**
Chosen Option : **2**

Q.12 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. Mn
3. Fe
4. Zn

Question ID : **41652910095**
Option 1 ID : **41652939840**
Option 2 ID : **41652939839**
Option 3 ID : **41652939838**
Option 4 ID : **41652939841**
Status : **Not Answered**
Chosen Option : **--**

Q.13 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 $PbSO_4 = 303\ g\ mol^{-1}$)

Options

1. 22.8
2. 15.2
3. 7.6

4. 11.4

Question ID : **41652910103**
Option 1 ID : **41652939872**
Option 2 ID : **41652939870**
Option 3 ID : **41652939871**
Option 4 ID : **41652939873**
Status : **Not Answered**
Chosen Option : **--**

Q.14 Which one of the following statements regarding Henry's law is not correct ?

Options

1. Higher the value of K_H at a given pressure, higher is the solubility of the gas in the liquids.
2. Different gases have different K_H (Henry's law constant) values at the same temperature.
3. The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the solution.
4. The value of K_H increases with increase of temperature and K_H is function of the nature of the gas

Question ID : **41652910101**
Option 1 ID : **41652939864**
Option 2 ID : **41652939863**
Option 3 ID : **41652939862**
Option 4 ID : **41652939865**
Status : **Answered**
Chosen Option : **4**

Q.15 The following results were obtained during kinetic studies of the reaction ;

$2A + B \rightarrow$ Products

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 :

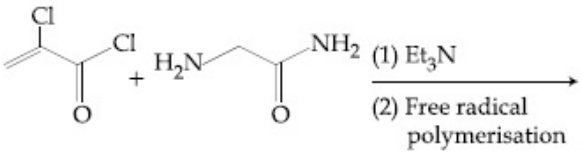
Options

1. 5
2. 10
3. 1
4. 100

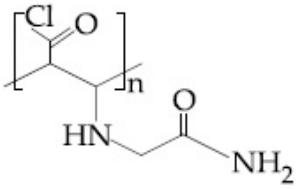
Question ID : **41652910104**
Option 1 ID : **41652939875**
Option 2 ID : **41652939877**
Option 3 ID : **41652939874**
Option 4 ID : **41652939876**
Status : **Not Answered**

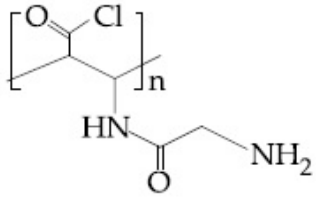
Chosen Option : **--**

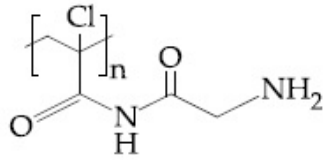
Q.16 Major product of the following reaction is :

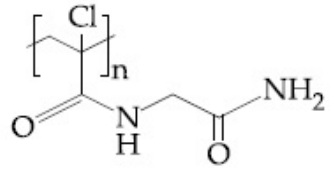


Options

1. 

2. 

3. 

4. 

Question ID : **41652910076**
Option 1 ID : **41652939764**
Option 2 ID : **41652939765**
Option 3 ID : **41652939762**
Option 4 ID : **41652939763**
Status : **Answered**
Chosen Option : **1**

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

Options

1. $Mg(NO_3)_2$
2. $Sr(NO_3)_2$
3. $Ca(NO_3)_2$
4. $Ba(NO_3)_2$

Question ID : **41652910089**
Option 1 ID : **41652939814**
Option 2 ID : **41652939816**
Option 3 ID : **41652939815**
Option 4 ID : **41652939817**
Status : **Not Answered**
Chosen Option : **--**

Q.18

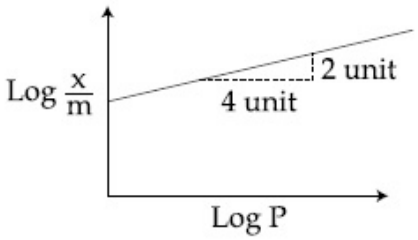
20 mL of 0.1 M H_2SO_4 solution is added to 30 mL of 0.2 M NH_4OH solution. The pH of the resultant mixture is : [pk_b of $NH_4OH = 4.7$].

Options

1. 5.2
2. 9.0
3. 5.0
4. 9.4

Question ID : **41652910102**
Option 1 ID : **41652939867**
Option 2 ID : **41652939868**
Option 3 ID : **41652939866**
Option 4 ID : **41652939869**
Status : **Not Answered**
Chosen Option : **--**

Q.19 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^2
2. $p^{1/4}$
3. $p^{1/2}$
4. p

Question ID : **41652910105**
Option 1 ID : **41652939879**
Option 2 ID : **41652939881**
Option 3 ID : **41652939878**
Option 4 ID : **41652939880**
Status : **Answered**
Chosen Option : **2**

Q.20 Which amongst the following is the strongest acid ?

Options

1. $CHBr_3$
2. CHI_3
3. $CH(CN)_3$
4. $CHCl_3$

Question ID : **41652910083**

Option 1 ID : **41652939791**
Option 2 ID : **41652939792**
Option 3 ID : **41652939793**
Option 4 ID : **41652939790**
Status : **Answered**
Chosen Option : **3**

Q.21 The ore that contains both iron and copper is :

Options
1. copper pyrites
2. malachite
3. dolomite
4. azurite

Question ID : **41652910087**
Option 1 ID : **41652939809**
Option 2 ID : **41652939806**
Option 3 ID : **41652939808**
Option 4 ID : **41652939807**
Status : **Answered**
Chosen Option : **3**

Q.22 For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number $(\bar{\nu})$ 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. Non linear
3. Linear with slope R_H
4. Linear with slope $-R_H$

Question ID : **41652910098**
Option 1 ID : **41652939850**
Option 2 ID : **41652939852**
Option 3 ID : **41652939853**
Option 4 ID : **41652939851**
Status : **Not Answered**
Chosen Option : **--**

Q.23 The isotopes of hydrogen are :

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

Question ID : **41652910088**
Option 1 ID : **41652939811**
Option 2 ID : **41652939810**
Option 3 ID : **41652939812**
Option 4 ID : **41652939813**
Status : **Not Answered**

Chosen Option : **--**

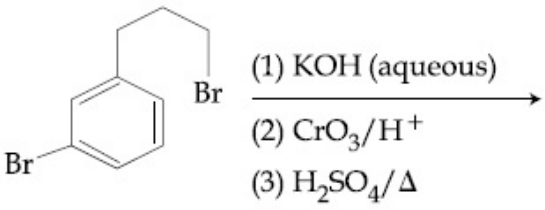
Q.24 According to molecular orbital theory, which of the following is true with respect to Li_2^+ and Li_2^- ?

Options

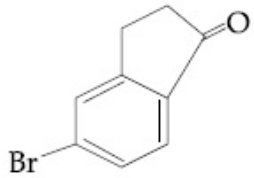
1. Li_2^+ is unstable and Li_2^- is stable
2. Li_2^+ is stable and Li_2^- is unstable
3. Both are stable
4. Both are unstable

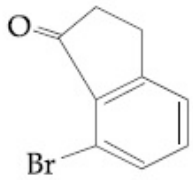
Question ID : **41652910099**
Option 1 ID : **41652939856**
Option 2 ID : **41652939855**
Option 3 ID : **41652939857**
Option 4 ID : **41652939854**
Status : **Not Answered**
Chosen Option : **--**

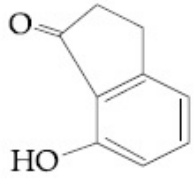
Q.25 The major product of the following reaction is :

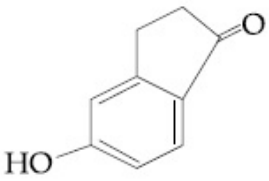


Options

1. 

2. 

3. 

4. 

Question ID : **41652910082**
Option 1 ID : **41652939786**
Option 2 ID : **41652939787**
Option 3 ID : **41652939789**
Option 4 ID : **41652939788**
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. inert pair effect
2. diagonal relationship
3. lattice effect
4. lanthanoid contraction

Question ID : **41652910091**
Option 1 ID : **41652939825**
Option 2 ID : **41652939823**
Option 3 ID : **41652939824**
Option 4 ID : **41652939822**
Status : **Answered**
Chosen Option : **1**

Q.27 The increasing order of pKa of the following amino acids in aqueous solution is :

Gly Asp Lys Arg

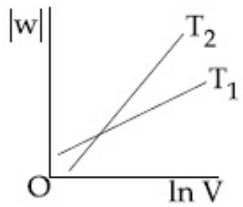
Options

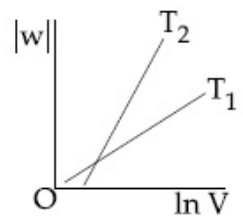
1. Asp < Gly < Arg < Lys
2. Gly < Asp < Arg < Lys
3. Asp < Gly < Lys < Arg
4. Arg < Lys < Gly < Asp

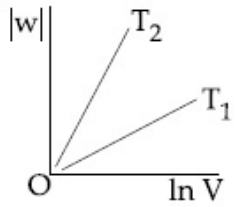
Question ID : **41652910077**
Option 1 ID : **41652939769**
Option 2 ID : **41652939766**
Option 3 ID : **41652939767**
Option 4 ID : **41652939768**
Status : **Not Answered**
Chosen Option : **--**

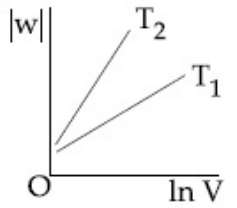
Q.28 Consider the reversible isothermal expansion of an ideal gas in a closed system at two different temperatures T_1 and T_2 ($T_1 < T_2$). The correct graphical depiction of the dependence of work done (w) on the final volume (V) is :

Options

1. 

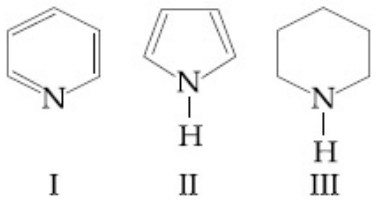
2. 

3. 

4. 

Question ID : **41652910100**
Option 1 ID : **41652939860**
Option 2 ID : **41652939861**
Option 3 ID : **41652939859**
Option 4 ID : **41652939858**
Status : **Not Answered**
Chosen Option : **--**

Q.29 Arrange the following amines in the decreasing order of basicity :

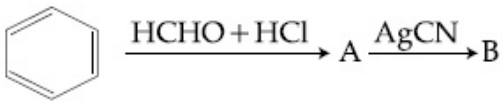


I II III

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

Question ID : **41652910078**
Option 1 ID : **41652939773**
Option 2 ID : **41652939771**
Option 3 ID : **41652939770**
Option 4 ID : **41652939772**
Status : **Answered**
Chosen Option : **1**

Q.30 The compounds A and B in the following reaction are, respectively :



Options
1. A = Benzyl alcohol, B = Benzyl cyanide
2. A = Benzyl chloride, B = Benzyl cyanide
3. A = Benzyl alcohol, B = Benzyl isocyanide

4. A = Benzyl chloride, B = Benzyl isocyanide

Question ID : **41652910081**
Option 1 ID : **41652939785**
Option 2 ID : **41652939784**
Option 3 ID : **41652939782**
Option 4 ID : **41652939783**
Status : **Answered**
Chosen Option : **4**

Section : **Mathematics**

Q.1

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 : **Answered**
Chosen Option : **1**

Q.2

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

Options

1. 6π
2. $3\sqrt{3}\ \pi$
3. $\frac{4}{3}\pi$
4. $2\sqrt{3}\ \pi$

Question ID : **41652910118**
Option 1 ID : **41652939930**
Option 2 ID : **41652939931**
Option 3 ID : **41652939933**
Option 4 ID : **41652939932**
Status : **Answered**
Chosen Option : **4**

Q.3

For $x^2 \neq n\pi + 1$, $n \in N$ (the set of natural numbers), the integral

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

equal to :

(where c is a constant of integration)

Options

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

Question ID : **41652910119**
Option 1 ID : **41652939936**
Option 2 ID : **41652939934**
Option 3 ID : **41652939937**
Option 4 ID : **41652939935**
Status : **Answered**
Chosen Option : **3**

Q.4 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. $\frac{1}{4}$
3. $\frac{49}{16}$
4. $\frac{13}{16}$

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

Q.5

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

Question ID : **41652910126**
Option 1 ID : **41652939964**
Option 2 ID : **41652939965**
Option 3 ID : **41652939963**
Option 4 ID : **41652939962**
Status : **Not Answered**
Chosen Option : **--**

Q.6

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. $(3, \infty)$
2. $(3/2, 2]$
3. $(2, 3]$
4. $(1, 3/2]$

Question ID : **41652910127**
Option 1 ID : **41652939969**
Option 2 ID : **41652939967**
Option 3 ID : **41652939968**
Option 4 ID : **41652939966**
Status : **Not Answered**
Chosen Option : **--**

Q.7

For $x \in \mathbf{R} - \{0, 1\}$, 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 $(f_2 \circ J \circ f_1)(x) = f_3(x)$ then $J(x)$ is equal to :

Options

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

Question ID : **41652910106**

Option 1 ID : **41652939884**
Option 2 ID : **41652939885**
Option 3 ID : **41652939883**
Option 4 ID : **41652939882**
Status : **Answered**
Chosen Option : **2**

Q.8

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 $\left|\vec{c}\right|^2$ is equal to :

Options

1. $\frac{19}{2}$
2. 9
3. 8
4. $\frac{17}{2}$

Question ID : **41652910130**
Option 1 ID : **41652939978**
Option 2 ID : **41652939980**
Option 3 ID : **41652939981**
Option 4 ID : **41652939979**
Status : **Answered**
Chosen Option : **4**

Q.9

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

Options

1. -2
2. -3
3. 4
4. 2

Question ID : **41652910114**
Option 1 ID : **41652939914**
Option 2 ID : **41652939915**
Option 3 ID : **41652939917**
Option 4 ID : **41652939916**
Status : **Answered**
Chosen Option : **1**

Q.10

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

Options

1. $\frac{\sqrt{145}}{12}$
2. $\frac{\sqrt{145}}{10}$

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

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

Question ID : **41652910134**
Option 1 ID : **41652939994**
Option 2 ID : **41652939997**
Option 3 ID : **41652939995**
Option 4 ID : **41652939996**
Status : **Answered**
Chosen Option : **1**

Q.11 Equation of a common tangent to the circle, $x^2+y^2-6x=0$ and the parabola, $y^2=4x$, is :

Options

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

2. $\sqrt{3}y = x + 3$

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

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

Question ID : **41652910124**
Option 1 ID : **41652939955**
Option 2 ID : **41652939957**
Option 3 ID : **41652939954**
Option 4 ID : **41652939956**
Status : **Answered**
Chosen Option : **3**

Q.12 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 a unique solution for $|a|=\sqrt{3}$

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

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

Question ID : **41652910110**
Option 1 ID : **41652939900**
Option 2 ID : **41652939901**
Option 3 ID : **41652939899**
Option 4 ID : **41652939898**
Status : **Not Answered**
Chosen Option : **--**

Q.13 If the fractional part of the number $\frac{2^{403}}{15}$ is $\frac{k}{15}$, then k is equal to :

Options

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

Question ID : **41652910112**
Option 1 ID : **41652939909**
Option 2 ID : **41652939907**
Option 3 ID : **41652939906**
Option 4 ID : **41652939908**
Status : **Not Answered**
Chosen Option : **--**

Q.14 The equation of the line passing through $(-4, 3, 1)$, parallel to the plane $x+2y-z-5=0$ and intersecting the line $\frac{x+1}{-3}=\frac{y-3}{2}=\frac{z-2}{-1}$ is :

Options

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

Question ID : **41652910129**
Option 1 ID : **41652939977**
Option 2 ID : **41652939975**
Option 3 ID : **41652939976**
Option 4 ID : **41652939974**
Status : **Answered**
Chosen Option : **2**

Q.15 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 concurrent at the point $\left(\frac{3}{4}, \frac{1}{2}\right)$.
2. Each line passes through the origin.
3. The lines are all parallel.
4. The lines are not concurrent.

Question ID : **41652910123**
Option 1 ID : **41652939951**
Option 2 ID : **41652939953**
Option 3 ID : **41652939950**
Option 4 ID : **41652939952**
Status : **Not Answered**
Chosen Option : **--**

Q.16

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

Options

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

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

Q.17

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

Question ID : **41652910128**
Option 1 ID : **41652939970**
Option 2 ID : **41652939971**
Option 3 ID : **41652939973**
Option 4 ID : **41652939972**
Status : **Answered**
Chosen Option : **4**

Q.18

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

Question ID : **41652910117**

Option 1 ID : **41652939928**
Option 2 ID : **41652939927**
Option 3 ID : **41652939929**
Option 4 ID : **41652939926**
Status : **Answered**
Chosen Option : **1**

Q.19

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 : **41652939895**
Option 3 ID : **41652939894**
Option 4 ID : **41652939896**
Status : **Not Answered**
Chosen Option : **--**

Q.20

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. $(\vee, \wedge)$
2. $(\vee, \vee)$
3. $(\wedge, \vee)$
4. $(\wedge, \wedge)$

Question ID : **41652910135**
Option 1 ID : **41652940001**
Option 2 ID : **41652940000**

Option 3 ID : **41652939999**
Option 4 ID : **41652939998**
Status : **Not Answered**
Chosen Option : **--**

Q.21 5 students of a class have an average height 150 cm and variance 18 cm^2. A new student, whose height is 156 cm, joined them. The variance (in cm^2) of the height of these six students is :

Options
1. 16
2. 22
3. 20
4. 18

Question ID : **41652910131**
Option 1 ID : **41652939983**
Option 2 ID : **41652939985**
Option 3 ID : **41652939982**
Option 4 ID : **41652939984**
Status : **Answered**
Chosen Option : **3**

Q.22 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. $13 - 4\cos^2\theta + 6\sin^2\theta\cos^2\theta$
2. $13 - 4\cos^6\theta$
3. $13 - 4\cos^2\theta + 6\cos^4\theta$
4. $13 - 4\cos^4\theta + 2\sin^2\theta\cos^2\theta$

Question ID : **41652910133**
Option 1 ID : **41652939990**
Option 2 ID : **41652939993**
Option 3 ID : **41652939991**
Option 4 ID : **41652939992**
Status : **Not Answered**
Chosen Option : **--**

Q.23 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. $\frac{8}{3}$
2. $\frac{32}{3}$
3. $\frac{56}{3}$
4. $\frac{14}{3}$

Question ID : **41652910121**
Option 1 ID : **41652939942**
Option 2 ID : **41652939945**
Option 3 ID : **41652939944**
Option 4 ID : **41652939943**
Status : **Answered**
Chosen Option : **1**

Q.24

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

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

then a_{10} is equal to :

Options

1. 52
2. 57
3. 47
4. 42

Question ID : **41652910113**
Option 1 ID : **41652939913**
Option 2 ID : **41652939912**
Option 3 ID : **41652939911**
Option 4 ID : **41652939910**
Status : **Not Answered**
Chosen Option : **--**

Q.25

Let $f : \mathbf{R} \to \mathbf{R}$ be a function defined as

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

Then, f is :

Options

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

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

Q.26

Let $A = \left\{\theta \in \left(-\frac{\pi}{2}, \pi\right) : \frac{3 + 2i\sin\theta}{1 - 2i\sin\theta} \text{ is purely imaginary}\right\}$. Then the sum of the elements in A is :

Options

1. $\frac{5\pi}{6}$
2. π
3. $\frac{3\pi}{4}$
4. $\frac{2\pi}{3}$

Question ID : **41652910107**
Option 1 ID : **41652939889**
Option 2 ID : **41652939886**
Option 3 ID : **41652939888**
Option 4 ID : **41652939887**
Status : **Answered**
Chosen Option : **4**

Q.27 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. 500
2. 200
3. 300
4. 350

Question ID : **41652910111**
Option 1 ID : **41652939905**
Option 2 ID : **41652939902**
Option 3 ID : **41652939903**
Option 4 ID : **41652939904**
Status : **Not Answered**
Chosen Option : **--**

Q.28 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. -256
2. 512
3. -512
4. 256

Question ID : **41652910108**
Option 1 ID : **41652939891**
Option 2 ID : **41652939892**
Option 3 ID : **41652939893**

Option 4 ID : **41652939890**
Status : **Answered**
Chosen Option : **3**

Q.29 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. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$
2. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$
3. a, b, c are in A.P.
4. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ are in A.P.

Question ID : **41652910125**
Option 1 ID : **41652939960**
Option 2 ID : **41652939961**
Option 3 ID : **41652939958**
Option 4 ID : **41652939959**
Status : **Answered**
Chosen Option : **4**

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. 49/169
2. 52/169
3. 24/169
4. 25/169

Question ID : **41652910132**
Option 1 ID : **41652939988**
Option 2 ID : **41652939989**
Option 3 ID : **41652939986**
Option 4 ID : **41652939987**
Status : **Answered**
Chosen Option : **3**