JEE April 2019

Test Date	09/04/2019
Test Time	9:30 AM - 12:30 PM
Subject	Paper I EH

Section : **Physics**

Q.1 A capacitor with capacitance 5 μF is charged to 5 μC. If the plates are pulled apart to reduce the capacitance to 2 μF, how much work is done ?

Options

1. 6.25×10^{-6} J
2. 2.55×10^{-6} J
3. 2.16×10^{-6} J
4. 3.75×10^{-6} J ✓

Question Type : **MCQ**
Question ID : **41652913790**
Option 1 ID : **41652953938**
Option 2 ID : **41652953940**
Option 3 ID : **41652953939**
Option 4 ID : **41652953941**
Status : **Answered**
Chosen Option : **4**

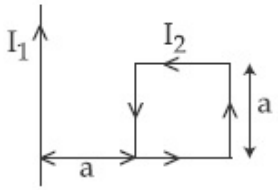
Q.2 Taking the wavelength of first Balmer line in hydrogen spectrum (n = 3 to n = 2) as 660 nm, the wavelength of the 2nd Balmer line (n = 4 to n = 2) will be :

Options

1. 889.2 nm
2. 488.9 nm ✓
3. 388.9 nm
4. 642.7 nm

Question Type : **MCQ**
Question ID : **41652913800**
Option 1 ID : **41652953979**
Option 2 ID : **41652953978**
Option 3 ID : **41652953980**
Option 4 ID : **41652953981**
Status : **Answered**
Chosen Option : **2**

Q.3 A rigid square loop of side 'a' and carrying current I_2 is lying on a horizontal surface near a long current I_1 carrying wire in the same plane as shown in figure. The net force on the loop due to the wire will be :



Options

1. Attractive and equal to $\frac{\mu_o I_1 I_2}{3\pi}$
2. Repulsive and equal to $\frac{\mu_o I_1 I_2}{4\pi}$ ✓
3. Repulsive and equal to $\frac{\mu_o I_1 I_2}{2\pi}$
4. Zero

Question Type : **MCQ**
Question ID : **41652913795**
Option 1 ID : **41652953959**
Option 2 ID : **41652953960**
Option 3 ID : **41652953961**
Option 4 ID : **41652953958**
Status : **Answered**
Chosen Option : **2**

Q.4 A body of mass 2 kg makes an elastic collision with a second body at rest and continues to move in the original direction but with one fourth of its original speed. What is the mass of the second body ?

Options

1. 1.8 kg
2. 1.2 kg ✓
3. 1.0 kg
4. 1.5 kg

Question Type : **MCQ**
Question ID : **41652913779**
Option 1 ID : **41652953897**
Option 2 ID : **41652953895**
Option 3 ID : **41652953896**
Option 4 ID : **41652953894**
Status : **Answered**
Chosen Option : **2**

Q.5 A string is clamped at both the ends and it is vibrating in its 4^{th} harmonic. The equation of the stationary wave is $Y = 0.3 \sin(0.157x) \cos(200\pi t)$. The length of the string is : (All quantities are in SI units.)

Options

1. 20 m
2. 60 m
3. 40 m
4. 80 m ✓

Question Type : **MCQ**
Question ID : **41652913788**
Option 1 ID : **41652953933**
Option 2 ID : **41652953931**
Option 3 ID : **41652953932**
Option 4 ID : **41652953930**
Status : **Answered**
Chosen Option : **1**

Q.6 A stationary horizontal disc is free to rotate about its axis. When a torque is applied on it, its kinetic energy as a function of θ, where θ is the angle by which it has rotated, is given as $k\theta^2$. If its moment of inertia is I then the angular acceleration of the disc is :

Options

1. $\frac{2k}{I}\theta$ ✓
2. $\frac{k}{2I}\theta$
3. $\frac{k}{4I}\theta$
4. $\frac{k}{I}\theta$

Question Type : **MCQ**
Question ID : **41652913782**
Option 1 ID : **41652953907**
Option 2 ID : **41652953908**
Option 3 ID : **41652953909**
Option 4 ID : **41652953906**
Status : **Marked For Review**
Chosen Option : **1**

Q.7

A signal Acosωt is transmitted using $v_0 \sin\omega_0 t$ as carrier wave. The correct amplitude modulated (AM) signal is :

Options

1. $v_0 \sin[\omega_0(1+0.01A\sin\omega t)t]$
2. $(v_0+A)\cos\omega t \sin\omega_0 t$
3. $v_0 \sin\omega_0 t + A\cos\omega t$
4. $v_0 \sin\omega_0 t + \frac{A}{2}\sin(\omega_0 - \omega)t + \frac{A}{2}\sin(\omega_0 + \omega)t$ ✓

Question Type : **MCQ**
Question ID : **41652913803**
Option 1 ID : **41652953993**
Option 2 ID : **41652953991**
Option 3 ID : **41652953990**
Option 4 ID : **41652953992**
Status : **Not Answered**
Chosen Option : **--**

Q.8

A rectangular coil (Dimension 5 cm × 2.5 cm) with 100 turns, carrying a current of 3 A in the clock-wise direction, is kept centered at the origin and in the X-Z plane. A magnetic field of 1 T is applied along X-axis. If the coil is tilted through 45° about Z-axis, then the torque on the coil is :

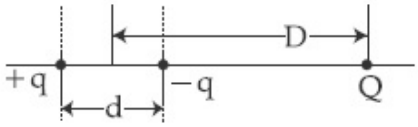
Options

1. 0.42 Nm
2. 0.55 Nm
3. 0.38 Nm
4. 0.27 Nm ✓

Question Type : **MCQ**
Question ID : **41652913794**
Option 1 ID : **41652953957**
Option 2 ID : **41652953955**
Option 3 ID : **41652953956**
Option 4 ID : **41652953954**
Status : **Answered**
Chosen Option : **3**

Q.9

A system of three charges are placed as shown in the figure :



If D >> d, the potential energy of the system is best given by :

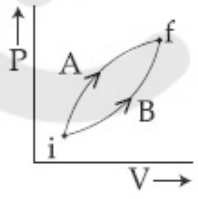
Options

1. $\frac{1}{4\pi\epsilon_o}\left[-\frac{q^2}{d}-\frac{qQd}{D^2}\right]$ ✓
2. $\frac{1}{4\pi\epsilon_o}\left[+\frac{q^2}{d}+\frac{qQd}{D^2}\right]$
3. $\frac{1}{4\pi\epsilon_o}\left[-\frac{q^2}{d}-\frac{qQd}{2D^2}\right]$
4. $\frac{1}{4\pi\epsilon_o}\left[-\frac{q^2}{d}+\frac{2qQd}{D^2}\right]$

Question Type : **MCQ**
Question ID : **41652913791**
Option 1 ID : **41652953945**
Option 2 ID : **41652953942**
Option 3 ID : **41652953943**
Option 4 ID : **41652953944**
Status : **Answered**
Chosen Option : **1**

Q.10

Following figure shows two processes A and B for a gas. If ΔQ_A and ΔQ_B are the amount of heat absorbed by the system in two cases, and ΔU_A and ΔU_B are changes in internal energies, respectively, then :

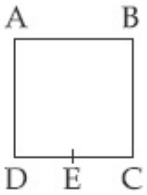


Options

1. $\Delta Q_A < \Delta Q_B$, $\Delta U_A < \Delta U_B$
2. $\Delta Q_A = \Delta Q_B$; $\Delta U_A = \Delta U_B$
3. $\Delta Q_A > \Delta Q_B$, $\Delta U_A = \Delta U_B$ ✓
4. $\Delta Q_A > \Delta Q_B$, $\Delta U_A > \Delta U_B$

Question Type : **MCQ**
Question ID : **41652913786**
Option 1 ID : **41652953925**
Option 2 ID : **41652953922**
Option 3 ID : **41652953924**
Option 4 ID : **41652953923**
Status : **Answered**
Chosen Option : **3**

Q.11 A wire of resistance R is bent to form a square ABCD as shown in the figure. The effective resistance between E and C is : (E is mid-point of arm CD)



Options

1. R
2. $\frac{7}{64}$ R ✓
3. $\frac{1}{16}$ R
4. $\frac{3}{4}$ R

Question Type : **MCQ**
Question ID : **41652913792**
Option 1 ID : **41652953949**
Option 2 ID : **41652953948**
Option 3 ID : **41652953947**
Option 4 ID : **41652953946**
Status : **Answered**
Chosen Option : **2**

Q.12 An NPN transistor is used in common emitter configuration as an amplifier with 1 kΩ load resistance. Signal voltage of 10 mV is applied across the base-emitter. This produces a 3 mA change in the collector current and 15 μA change in the base current of the amplifier. The input resistance and voltage gain are :

Options

1. 0.33 kΩ, 1.5
2. 0.67 kΩ, 300 ✓
3. 0.67 kΩ, 200

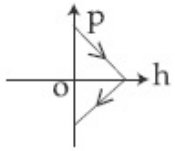
4. 0.33 kΩ, 300

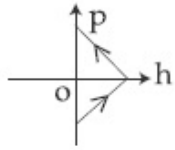
Question Type : **MCQ**
Question ID : **41652913802**
Option 1 ID : **41652953987**
Option 2 ID : **41652953988**
Option 3 ID : **41652953989**
Option 4 ID : **41652953986**
Status : **Not Answered**
Chosen Option : **--**

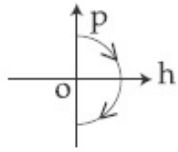
Q.13

A ball is thrown vertically up (taken as +z-axis) from the ground. The correct momentum-height (p-h) diagram is :

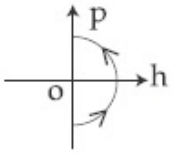
Options

1. 

2. 

3. 

✓

4. 

Question Type : **MCQ**
Question ID : **41652913778**
Option 1 ID : **41652953893**
Option 2 ID : **41652953891**
Option 3 ID : **41652953892**
Option 4 ID : **41652953890**
Status : **Answered**
Chosen Option : **3**

Q.14

The electric field of light wave is given as

$$\vec{E} = 10^{-3}\cos\left(\frac{2\pi x}{5\times 10^{-7}} - 2\pi\times 6\times 10^{14}\,t\right)\hat{x}\ \frac{N}{C}$$

This light falls on a metal plate of work function 2eV. The stopping potential of the photo-electrons is :

Given, $E\ (\text{in eV}) = \dfrac{12375}{\lambda(\text{in Å})}$

Options

1. 0.72 V
2. 2.0 V
3. 2.48 V
4. 0.48 V ✓

Question Type : **MCQ**
Question ID : **41652913801**
Option 1 ID : **41652953982**
Option 2 ID : **41652953985**
Option 3 ID : **41652953984**
Option 4 ID : **41652953983**
Status : **Answered**
Chosen Option : **4**

Q.15

A simple pendulum oscillating in air has period T. The bob of the pendulum is completely immersed in a non-viscous liquid. The density of the liquid is $\frac{1}{16}$th of the material of the bob. If the bob is inside liquid all the time, its period of oscillation in this liquid is :

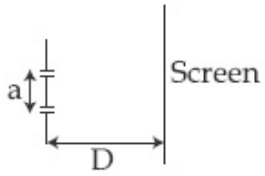
Options

1. $2T\sqrt{\frac{1}{10}}$
2. $2T\sqrt{\frac{1}{14}}$
3. $4T\sqrt{\frac{1}{15}}$ ✓
4. $4T\sqrt{\frac{1}{14}}$

Question Type : **MCQ**
Question ID : **41652913785**
Option 1 ID : **41652953918**

Option 2 ID : **41652953921**
Option 3 ID : **41652953919**
Option 4 ID : **41652953920**
Status : **Answered**
Chosen Option : **3**

Q.16 The figure shows a Young's double slit experimental setup. It is observed that when a thin transparent sheet of thickness t and refractive index μ is put in front of one of the slits, the central maximum gets shifted by a distance equal to n fringe widths. If the wavelength of light used is λ, t will be :



Options

1. $\frac{D\lambda}{a(\mu - 1)}$

2. $\frac{nD\lambda}{a(\mu - 1)}$ ✓

3. $\frac{2nD\lambda}{a(\mu - 1)}$

4. $\frac{2D\lambda}{a(\mu - 1)}$

Question Type : **MCQ**
Question ID : **41652913799**
Option 1 ID : **41652953974**
Option 2 ID : **41652953975**
Option 3 ID : **41652953977**
Option 4 ID : **41652953976**
Status : **Answered**
Chosen Option : **2**

Q.17 A uniform cable of mass 'M' and length 'L' is placed on a horizontal surface such that its $\left(\frac{1}{n}\right)^{th}$ part is hanging below the edge of the surface. To lift the hanging part of the cable upto the surface, the work done should be :

Options

1. $\frac{MgL}{2n^2}$ ✓
2. $\frac{MgL}{n^2}$
3. $nMgL$
4. $\frac{2MgL}{n^2}$

Question Type : **MCQ**
Question ID : **41652913780**
Option 1 ID : **41652953900**
Option 2 ID : **41652953898**
Option 3 ID : **41652953901**
Option 4 ID : **41652953899**
Status : **Answered**
Chosen Option : **2**

Q.18 The pressure wave, $P = 0.01\sin[1000t - 3x]\,Nm^{-2}$, corresponds to the sound produced by a vibrating blade on a day when atmospheric temperature is 0°C. On some other day when temperature is T, the speed of sound produced by the same blade and at the same frequency is found to be $336\ ms^{-1}$. Approximate value of T is :

Options
1. 12°C
2. 15°C
3. 4°C ✓
4. 11°C

Question Type : **MCQ**
Question ID : **41652913789**
Option 1 ID : **41652953934**
Option 2 ID : **41652953936**
Option 3 ID : **41652953937**
Option 4 ID : **41652953935**
Status : **Not Answered**
Chosen Option : **--**

Q.19 If 'M' is the mass of water that rises in a capillary tube of radius 'r', then mass of water which will rise in a capillary tube of radius '2r' is :

Options
1. 4 M

2. $2\,M$ ✓

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

4. M

Question Type : **MCQ**
Question ID : **41652913804**
Option 1 ID : **41652953994**
Option 2 ID : **41652953995**
Option 3 ID : **41652953997**
Option 4 ID : **41652953996**
Status : **Answered**
Chosen Option : **2**

Q.20 A concave mirror for face viewing has focal length of 0.4 m. The distance at which you hold the mirror from your face in order to see your image upright with a magnification of 5 is :

Options

1. 1.60 m

2. 0.16 m

3. 0.32 m ✓

4. 0.24 m

Question Type : **MCQ**
Question ID : **41652913798**
Option 1 ID : **41652953971**
Option 2 ID : **41652953970**
Option 3 ID : **41652953972**
Option 4 ID : **41652953973**
Status : **Answered**
Chosen Option : **3**

Q.21 For a given gas at 1 atm pressure, rms speed of the molecules is 200 m/s at 127 °C. At 2 atm pressure and at 227 °C, the rms speed of the molecules will be :

Options

1. 100 m/s

2. 80 m/s

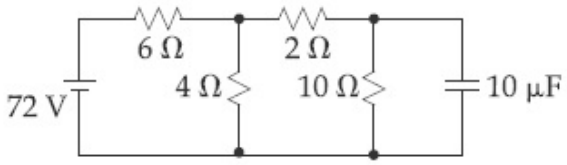
3. $80\sqrt{5}$ m/s

4. $100\sqrt{5}$ m/s ✓

Question Type : **MCQ**
Question ID : **41652913784**
Option 1 ID : **41652953916**
Option 2 ID : **41652953917**

Option 3 ID : **41652953915**
Option 4 ID : **41652953914**
Status : **Answered**
Chosen Option : **4**

Q.22 Determine the charge on the capacitor in the following circuit :



Options
1. $2\ \mu C$
2. $60\ \mu C$
3. $10\ \mu C$
4. $200\ \mu C$ ✓

Question Type : **MCQ**
Question ID : **41652913793**
Option 1 ID : **41652953950**
Option 2 ID : **41652953952**
Option 3 ID : **41652953953**
Option 4 ID : **41652953951**
Status : **Answered**
Chosen Option : **4**

Q.23 The magnetic field of a plane electromagnetic wave is given by :

$$\vec{B} = B_0 \hat{i}[\cos(kz - \omega t)] + B_1 \hat{j}\cos(kz + \omega t)$$

where $B_0 = 3 \times 10^{-5}$ T and $B_1 = 2 \times 10^{-6}$ T. The rms value of the force experienced by a stationary charge $Q = 10^{-4}$ C at $z = 0$ is closest to :

Options
1. 0.1 N
2. 0.9 N
3. 3×10^{-2} N
4. 0.6 N ✓

Question Type : **MCQ**
Question ID : **41652913797**
Option 1 ID : **41652953969**
Option 2 ID : **41652953968**
Option 3 ID : **41652953967**
Option 4 ID : **41652953966**
Status : **Not Answered**
Chosen Option : **--**

Q.24 A moving coil galvanometer has resistance 50 Ω and it indicates full deflection at 4 mA current. A voltmeter is made using this galvanometer and a 5 kΩ resistance. The maximum voltage, that can be measured using this voltmeter, will be close to :

Options

1. 40 V
2. 15 V
3. 20 V ✓
4. 10 V

Question Type : **MCQ**
Question ID : **41652913805**
Option 1 ID : **41652954001**
Option 2 ID : **41652953999**
Option 3 ID : **41652954000**
Option 4 ID : **41652953998**
Status : **Answered**
Chosen Option : **3**

Q.25 An HCl molecule has rotational, translational and vibrational motions. If the rms velocity of HCl molecules in its gaseous phase is $\bar{\nu}$, m is its mass and k_B is Boltzmann constant, then its temperature will be :

Options

1. $\frac{m\bar{\nu}^2}{5k_B}$
2. $\frac{m\bar{\nu}^2}{3k_B}$
3. $\frac{m\bar{\nu}^2}{6k_B}$ ✓
4. $\frac{m\bar{\nu}^2}{7k_B}$

Question Type : **MCQ**
Question ID : **41652913787**
Option 1 ID : **41652953927**
Option 2 ID : **41652953928**
Option 3 ID : **41652953929**
Option 4 ID : **41652953926**
Status : **Answered**
Chosen Option : **1**

Q.26 A solid sphere of mass 'M' and radius 'a' is surrounded by a uniform concentric spherical shell of thickness 2a and mass 2M. The gravitational field at distance '3a' from the centre will be :

Options

1. $\frac{GM}{9a^2}$
2. $\frac{GM}{3a^2}$ ✓
3. $\frac{2GM}{3a^2}$
4. $\frac{2GM}{9a^2}$

Question Type : **MCQ**
Question ID : **41652913783**
Option 1 ID : **41652953910**
Option 2 ID : **41652953912**
Option 3 ID : **41652953913**
Option 4 ID : **41652953911**
Status : **Answered**
Chosen Option : **1**

Q.27 The total number of turns and cross-section area in a solenoid is fixed. However, its length L is varied by adjusting the separation between windings. The inductance of solenoid will be proportional to :

Options

1. L
2. $1/L^2$
3. $1/L$ ✓
4. L^2

Question Type : **MCQ**
Question ID : **41652913796**
Option 1 ID : **41652953962**
Option 2 ID : **41652953964**
Option 3 ID : **41652953965**
Option 4 ID : **41652953963**
Status : **Answered**
Chosen Option : **3**

Q.28

In the density measurement of a cube, the mass and edge length are measured as (10.00 ± 0.10) kg and (0.10 ± 0.01) m, respectively. The error in the measurement of density is :

Options

1. $0.31\ kg/m^3$ ✓
2. $0.10\ kg/m^3$
3. $0.07\ kg/m^3$
4. $0.01\ kg/m^3$

Question Type : **MCQ**
Question ID : **41652913776**
Option 1 ID : **41652953884**
Option 2 ID : **41652953882**
Option 3 ID : **41652953883**
Option 4 ID : **41652953885**
Status : **Answered**
Chosen Option : **1**

Q.29

The stream of a river is flowing with a speed of 2 km/h. A swimmer can swim at a speed of 4 km/h. What should be the direction of the swimmer with respect to the flow of the river to cross the river straight ?

Options

1. 150°
2. 90°
3. 120° ✓
4. 60°

Question Type : **MCQ**
Question ID : **41652913777**
Option 1 ID : **41652953886**
Option 2 ID : **41652953888**
Option 3 ID : **41652953889**
Option 4 ID : **41652953887**
Status : **Answered**
Chosen Option : **3**

Q.30

The following bodies are made to roll up (without slipping) the same inclined plane from a horizontal plane : (i) a ring of radius R, (ii) a solid cylinder of radius $\frac{R}{2}$ and (iii) a solid sphere of radius $\frac{R}{4}$. If, in each case, the speed of the center of mass at the bottom of the incline is same, the ratio of the maximum heights they climb is :

Options

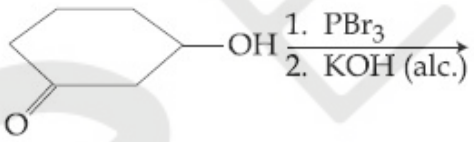
1. 2 : 3 : 4
2. 10 : 15 : 7 ✓
3. 4 : 3 : 2
4. 14 : 15 : 20

Question Type : **MCQ**
Question ID : **41652913781**
Option 1 ID : **41652953905**
Option 2 ID : **41652953904**
Option 3 ID : **41652953902**
Option 4 ID : **41652953903**
Status : **Answered**
Chosen Option : **4**

Section : **Chemistry**

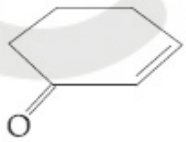
Q.1 ✓

The major product of the following reaction is :

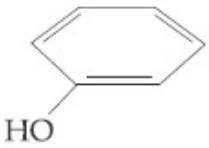


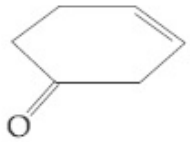
Options

1. 

2. 

✓

3. 

4. 

Question Type : **MCQ**
Question ID : **41652913810**
Option 1 ID : **41652954020**
Option 2 ID : **41652954019**
Option 3 ID : **41652954018**
Option 4 ID : **41652954021**
Status : **Answered**
Chosen Option : **4**

Q.2 The osmotic pressure of a dilute solution of an ionic compound XY in water is four times that of a solution of 0.01 M $BaCl_2$ in water. Assuming complete dissociation of the given ionic compounds in water, the concentration of XY (in mol L^{-1}) in solution is :

Options

1. 4×10^{-2}
2. 16×10^{-4}
3. 4×10^{-4}
4. 6×10^{-2} ✓

Question Type : **MCQ**
Question ID : **41652913832**
Option 1 ID : **41652954106**
Option 2 ID : **41652954107**
Option 3 ID : **41652954109**
Option 4 ID : **41652954108**
Status : **Answered**
Chosen Option : **4**

Q.3 The standard Gibbs energy for the given cell reaction in kJ mol^{-1} at 298 K is :

$Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$,

$E^o = 2$ V at 298 K

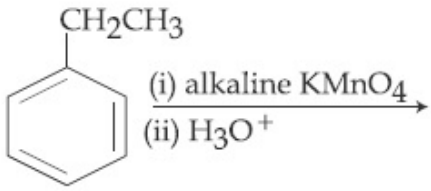
(Faraday's constant, $F = 96000$ C mol^{-1})

Options

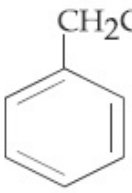
1. -192
2. 192
3. 384
4. -384 ✓

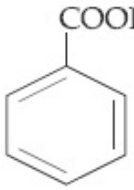
Question Type : **MCQ**
Question ID : **41652913833**
Option 1 ID : **41652954113**
Option 2 ID : **41652954110**
Option 3 ID : **41652954111**
Option 4 ID : **41652954112**
Status : **Answered**
Chosen Option : **4**

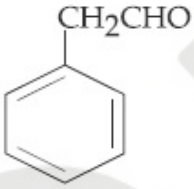
Q.4 The major product of the following reaction is :

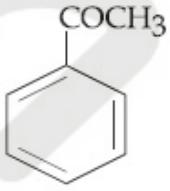


Options

1.


2. ✓


3.


4.


Question Type : **MCQ**
Question ID : **41652913812**
Option 1 ID : **41652954029**
Option 2 ID : **41652954027**
Option 3 ID : **41652954028**
Option 4 ID : **41652954026**
Status : **Answered**
Chosen Option : **2**

Q.5 Excessive release of CO_2 into the atmosphere results in :

Options

1. global warming ✓
2. polar vortex
3. depletion of ozone
4. formation of smog

Question Type : **MCQ**
Question ID : **41652913825**
Option 1 ID : **41652954080**
Option 2 ID : **41652954081**
Option 3 ID : **41652954078**
Option 4 ID : **41652954079**
Status : **Answered**
Chosen Option : **1**

Q.6 Among the following, the set of parameters that represents path functions, is :

(A) $q + w$

(B) q

(C) w

(D) $H - TS$

Options

1. (B) and (C) ✓
2. (A), (B) and (C)
3. (B), (C) and (D)
4. (A) and (D)

Question Type : **MCQ**
Question ID : **41652913830**
Option 1 ID : **41652954099**
Option 2 ID : **41652954101**
Option 3 ID : **41652954100**
Option 4 ID : **41652954098**
Status : **Answered**
Chosen Option : **1**

Q.7 The aerosol is a kind of colloid in which :

Options

1. solid is dispersed in gas ✓
2. liquid is dispersed in water
3. gas is dispersed in solid
4. gas is dispersed in liquid

Question Type : **MCQ**
Question ID : **41652913835**
Option 1 ID : **41652954121**

Option 2 ID : **41652954118**
Option 3 ID : **41652954120**
Option 4 ID : **41652954119**
Status : **Answered**
Chosen Option : **1**

Q.8 For a reaction,

$N_2(g) + 3\,H_2(g) \rightarrow 2\,NH_3(g)$; identify dihydrogen ($H_2$) as a limiting reagent in the following reaction mixtures.

Options

1. 28 g of N_2 + 6 g of H_2
2. 35 g of N_2 + 8 g of H_2
3. 56 g of N_2 + 10 g of H_2 ✓
4. 14 g of N_2 + 4 g of H_2

Question Type : **MCQ**
Question ID : **41652913826**
Option 1 ID : **41652954083**
Option 2 ID : **41652954084**
Option 3 ID : **41652954085**
Option 4 ID : **41652954082**
Status : **Answered**
Chosen Option : **3**

Q.9 The degenerate orbitals of $[Cr(H_2O)_6]^{3+}$ are :

Options

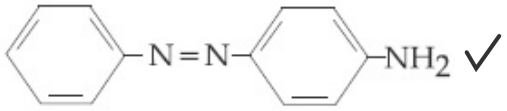
1. $d_{x^2-y^2}$ and d_{xy}
2. d_{z^2} and d_{xz}
3. d_{yz} and d_{z^2}
4. d_{xz} and d_{yz} ✓

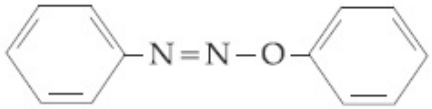
Question Type : **MCQ**
Question ID : **41652913824**
Option 1 ID : **41652954074**
Option 2 ID : **41652954076**
Option 3 ID : **41652954077**
Option 4 ID : **41652954075**
Status : **Answered**
Chosen Option : **1**

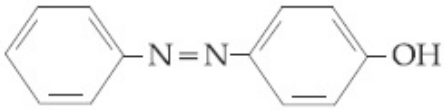
Q.10

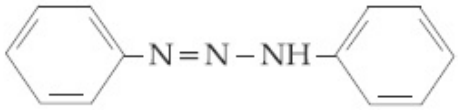
Aniline dissolved in dilute HCl is reacted with sodium nitrite at 0°C . This solution was added dropwise to a solution containing equimolar mixture of aniline and phenol in dil. HCl. The structure of the major product is :

Options

1.  ✓

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **41652913815**
Option 1 ID : **41652954040**
Option 2 ID : **41652954039**
Option 3 ID : **41652954041**
Option 4 ID : **41652954038**
Status : **Answered**
Chosen Option : **3**

Q.11 The element having greatest difference between its first and second ionization energies, is :

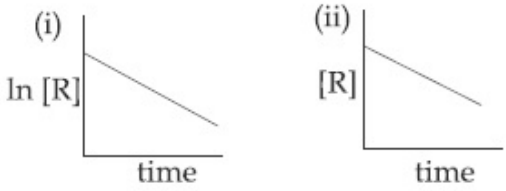
Options

1. Ba
2. K ✓
3. Ca
4. Sc

Question Type : **MCQ**
Question ID : **41652913816**
Option 1 ID : **41652954044**
Option 2 ID : **41652954042**
Option 3 ID : **41652954043**
Option 4 ID : **41652954045**
Status : **Answered**
Chosen Option : **2**

Q.12

The given plots represent the variation of the concentration of a reactant R with time for two different reactions (i) and (ii). The respective orders of the reactions are :



Options
1. 1, 1
2. 0, 1
3. 1, 0 ✓
4. 0, 2

Question Type : **MCQ**
Question ID : **41652913834**
Option 1 ID : **41652954116**
Option 2 ID : **41652954114**
Option 3 ID : **41652954115**
Option 4 ID : **41652954117**
Status : **Answered**
Chosen Option : **3**

Q.13 The number of water molecule(s) **not** coordinated to copper ion directly in $CuSO_4 \cdot 5H_2O$, is :

Options
1. 4
2. 2
3. 1 ✓
4. 3

Question Type : **MCQ**
Question ID : **41652913818**
Option 1 ID : **41652954053**
Option 2 ID : **41652954051**
Option 3 ID : **41652954050**
Option 4 ID : **41652954052**
Status : **Not Answered**
Chosen Option : **--**

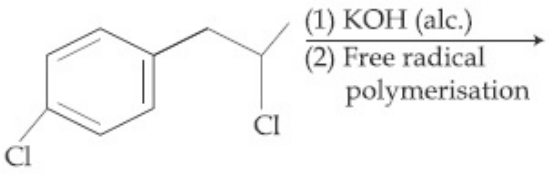
Q.14 C_{60}, an allotrope of carbon contains :

Options
1. 12 hexagons and 20 pentagons.
2. 16 hexagons and 16 pentagons.
3. 18 hexagons and 14 pentagons.

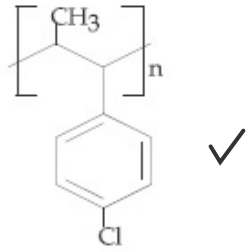
4. 20 hexagons and 12 pentagons. ✓

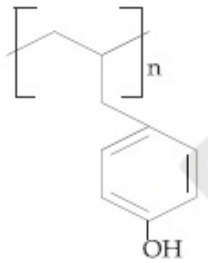
Question Type : **MCQ**
Question ID : **41652913821**
Option 1 ID : **41652954063**
Option 2 ID : **41652954064**
Option 3 ID : **41652954065**
Option 4 ID : **41652954062**
Status : **Answered**
Chosen Option : **4**

Q.15 The major product of the following reaction is :

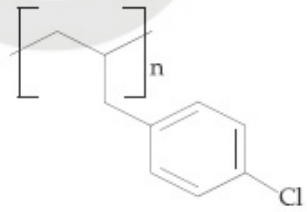


Options

1.  ✓

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **41652913811**
Option 1 ID : **41652954023**
Option 2 ID : **41652954024**
Option 3 ID : **41652954025**

Option 4 ID : **41652954022**
Status : **Answered**
Chosen Option : **1**

Q.16 The major product of the following reaction is :

$$CH_3C{\equiv}CH \xrightarrow[\text{(ii) DI}]{\text{(i) DCl (1 equiv.)}}$$

Options

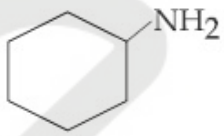
1. $CH_3CD(I)CHD(Cl)$
2. $CH_3CD(Cl)CHD(I)$
3. $CH_3CD_2CH(Cl)(I)$
4. $CH_3C(I)(Cl)CHD_2$ ✓

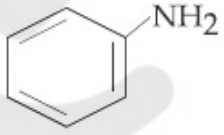
Question Type : **MCQ**
Question ID : **41652913808**
Option 1 ID : **41652954011**
Option 2 ID : **41652954012**
Option 3 ID : **41652954010**
Option 4 ID : **41652954013**
Status : **Answered**
Chosen Option : **4**

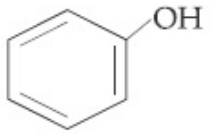
Q.17 The organic compound that gives following qualitative analysis is :

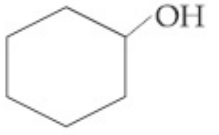
	Test	Inference
(a)	Dil. HCl	Insoluble
(b)	NaOH solution	soluble
(c)	Br_2/water	Decolourization

Options

1. 

2. 

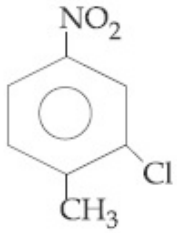
3. 

✓
4. 

Question Type : **MCQ**

Question ID : **41652913813**
Option 1 ID : **41652954033**
Option 2 ID : **41652954031**
Option 3 ID : **41652954032**
Option 4 ID : **41652954030**
Status : **Answered**
Chosen Option : **3**

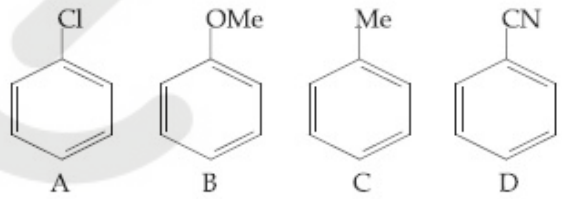
Q.18 The correct IUPAC name of the following compound is :



Options
1. 5-chloro-4-methyl-1-nitrobenzene
2. 2-chloro-1-methyl-4-nitrobenzene ✓
3. 2-methyl-5-nitro-1-chlorobenzene
4. 3-chloro-4-methyl-1-nitrobenzene

Question Type : **MCQ**
Question ID : **41652913814**
Option 1 ID : **41652954034**
Option 2 ID : **41652954035**
Option 3 ID : **41652954036**
Option 4 ID : **41652954037**
Status : **Answered**
Chosen Option : **3**

Q.19 The increasing order of reactivity of the following compounds towards aromatic electrophilic substitution reaction is :



Options
1. A < B < C < D
2. B < C < A < D
3. D < B < A < C
4. D < A < C < B ✓

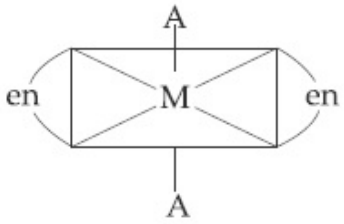
Question Type : **MCQ**
Question ID : **41652913807**

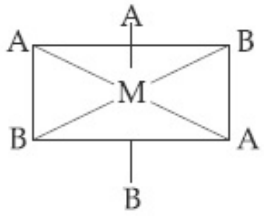
Option 1 ID : **41652954006**
Option 2 ID : **41652954009**
Option 3 ID : **41652954008**
Option 4 ID : **41652954007**
Status : **Answered**
Chosen Option : **4**

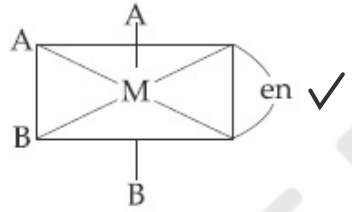
Q.20 The one that will show optical activity is :

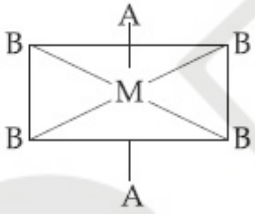
(en = ethane-1,2-diamine)

Options

1.


2.


3. ✓


4.


Question Type : **MCQ**
Question ID : **41652913823**
Option 1 ID : **41652954072**
Option 2 ID : **41652954073**
Option 3 ID : **41652954070**
Option 4 ID : **41652954071**
Status : **Answered**
Chosen Option : **3**

Q.21

Liquid 'M' and liquid 'N' form an ideal solution. The vapour pressures of pure liquids 'M' and 'N' are 450 and 700 mmHg, respectively, at the same temperature. Then **correct** statement is :

(x_M = Mole fraction of 'M' in solution;
x_N = Mole fraction of 'N' in solution;
y_M = Mole fraction of 'M' in vapour phase;
y_N = Mole fraction of 'N' in vapour phase)

Options

1. $\frac{x_M}{x_N} > \frac{y_M}{y_N}$ ✓
2. $\frac{x_M}{x_N} = \frac{y_M}{y_N}$
3. $\frac{x_M}{x_N} < \frac{y_M}{y_N}$
4. $(x_M - y_M) < (x_N - y_N)$

Question Type : **MCQ**
Question ID : **41652913831**
Option 1 ID : **41652954103**
Option 2 ID : **41652954102**
Option 3 ID : **41652954104**
Option 4 ID : **41652954105**
Status : **Answered**
Chosen Option : **1**

Q.22 Match the catalysts **(Column I)** with products **(Column II)**.

	Column I		**Column II**
	Catalyst		**Product**
(A)	V_2O_5	(i)	Polyethylene
(B)	$TiCl_4/Al(Me)_3$	(ii)	ethanal
(C)	$PdCl_2$	(iii)	H_2SO_4
(D)	Iron Oxide	(iv)	NH_3

Options

1. (A)-(iv); (B)-(iii); (C)-(ii); (D)-(i)
2. (A)-(iii); (B)-(iv); (C)-(i); (D)-(ii)
3. (A)-(ii); (B)-(iii); (C)-(i); (D)-(iv)
4. (A)-(iii); (B)-(i); (C)-(ii); (D)-(iv) ✓

Question Type : **MCQ**
Question ID : **41652913822**

Option 1 ID : **41652954067**
Option 2 ID : **41652954068**
Option 3 ID : **41652954066**
Option 4 ID : **41652954069**
Status : **Answered**
Chosen Option : **4**

Q.23 For any given series of spectral lines of atomic hydrogen, let $\Delta\bar{\nu} = \bar{\nu}_{max} - \bar{\nu}_{min}$ be the difference in maximum and minimum frequencies in cm^{-1}. The ratio $\Delta\bar{\nu}_{Lyman} / \Delta\bar{\nu}_{Balmer}$ is :

Options
1. 5 : 4
2. 27 : 5
3. 4 : 1
4. 9 : 4 ✓

Question Type : **MCQ**
Question ID : **41652913828**
Option 1 ID : **41652954093**
Option 2 ID : **41652954090**
Option 3 ID : **41652954091**
Option 4 ID : **41652954092**
Status : **Answered**
Chosen Option : **4**

Q.24 Among the following, the molecule expected to be stabilized by anion formation is :

C_2, O_2, NO, F_2

Options
1. F_2
2. C_2 ✓
3. O_2
4. NO

Question Type : **MCQ**
Question ID : **41652913829**
Option 1 ID : **41652954097**
Option 2 ID : **41652954095**
Option 3 ID : **41652954094**
Option 4 ID : **41652954096**
Status : **Answered**
Chosen Option : **2**

Q.25

Consider the van der Waals constants, a and b, for the following gases.

Gas	Ar	Ne	Kr	Xe
a/(atm dm^6 mol^{-2})	1.3	0.2	5.1	4.1
b/(10^{-2} dm^3 mol^{-1}	3.2	1.7	1.0	5.0

Which gas is expected to have the highest critical temperature ?

Options
1. Kr ✓
2. Ar
3. Xe
4. Ne

Question Type : **MCQ**
Question ID : **41652913827**
Option 1 ID : **41652954088**
Option 2 ID : **41652954086**
Option 3 ID : **41652954089**
Option 4 ID : **41652954087**
Status : **Answered**
Chosen Option : **1**

Q.26 The correct order of the oxidation states of nitrogen in NO, N_2O, NO_2 and N_2O_3 is :

Options
1. $N_2O < NO < N_2O_3 < NO_2$ ✓
2. $NO_2 < N_2O_3 < NO < N_2O$
3. $NO_2 < NO < N_2O_3 < N_2O$
4. $N_2O < N_2O_3 < NO < NO_2$

Question Type : **MCQ**
Question ID : **41652913820**
Option 1 ID : **41652954060**
Option 2 ID : **41652954059**
Option 3 ID : **41652954058**
Option 4 ID : **41652954061**
Status : **Answered**
Chosen Option : **1**

Q.27 Magnesium powder burns in air to give :

Options
1. MgO and Mg_3N_2 ✓
2. MgO only
3. $Mg(NO_3)_2$ and Mg_3N_2

4. MgO and $Mg(NO_3)_2$

Question Type : **MCQ**
Question ID : **41652913819**
Option 1 ID : **41652954056**
Option 2 ID : **41652954054**
Option 3 ID : **41652954055**
Option 4 ID : **41652954057**
Status : **Answered**
Chosen Option : **1**

Q.28 The major product of the following reaction is :

$$CH_3CH=CHCO_2CH_3 \xrightarrow{LiAlH_4}$$

Options

1. $CH_3CH_2CH_2CO_2CH_3$
2. $CH_3CH=CHCH_2OH$ ✓
3. $CH_3CH_2CH_2CH_2OH$
4. $CH_3CH_2CH_2CHO$

Question Type : **MCQ**
Question ID : **41652913806**
Option 1 ID : **41652954002**
Option 2 ID : **41652954003**
Option 3 ID : **41652954004**
Option 4 ID : **41652954005**
Status : **Answered**
Chosen Option : **3**

Q.29 The ore that contains the metal in the form of fluoride is :

Options

1. cryolite ✓
2. magnetite
3. malachite
4. sphalerite

Question Type : **MCQ**
Question ID : **41652913817**
Option 1 ID : **41652954047**
Option 2 ID : **41652954048**
Option 3 ID : **41652954049**
Option 4 ID : **41652954046**
Status : **Answered**
Chosen Option : **1**

Q.30 Which of the following statements is **not** true about sucrose ?

Options

1. It is also named as invert sugar
2. It is a non reducing sugar
3. The glycosidic linkage is present between C_1 of α-glucose and C_1 of β-fructose ✓
4. On hydrolysis, it produces glucose and fructose

Question Type : **MCQ**
Question ID : **41652913809**
Option 1 ID : **41652954017**
Option 2 ID : **41652954015**
Option 3 ID : **41652954016**
Option 4 ID : **41652954014**
Status : **Answered**
Chosen Option : **3**

Section : **Mathematics**

Q.1 Let $f(x)=15-|x-10|; x \in \mathbf{R}$. Then the set of all values of x, at which the function, $g(x)=f(f(x))$ is not differentiable, is :

Options

1. $\{5, 10, 15\}$ ✓
2. $\{10\}$
3. $\{10, 15\}$
4. $\{5, 10, 15, 20\}$

Question Type : **MCQ**
Question ID : **41652913846**
Option 1 ID : **41652954164**
Option 2 ID : **41652954162**
Option 3 ID : **41652954163**
Option 4 ID : **41652954165**
Status : **Not Answered**
Chosen Option : **--**

Q.2 If $f(x)$ is a non-zero polynomial of degree four, having local extreme points at $x=-1, 0, 1$; then the set

$$S=\{x \in \mathbf{R} : f(x)=f(0)\}$$

contains exactly :

Options

1. two irrational and two rational numbers.
2. four rational numbers.

3. two irrational and one rational number. ✓
4. four irrational numbers.

Question Type : **MCQ**
Question ID : **41652913848**
Option 1 ID : **41652954170**
Option 2 ID : **41652954172**
Option 3 ID : **41652954171**
Option 4 ID : **41652954173**
Status : **Not Answered**
Chosen Option : **--**

Q.3 If the line $y=mx+7\sqrt{3}$ is normal to the hyperbola $\frac{x^2}{24}-\frac{y^2}{18}=1$, then a value of m is :

Options

1. $\frac{\sqrt{5}}{2}$
2. $\frac{3}{\sqrt{5}}$
3. $\frac{\sqrt{15}}{2}$
4. $\frac{2}{\sqrt{5}}$ ✓

Question Type : **MCQ**
Question ID : **41652913857**
Option 1 ID : **41652954207**
Option 2 ID : **41652954208**
Option 3 ID : **41652954209**
Option 4 ID : **41652954206**
Status : **Not Answered**
Chosen Option : **--**

Q.4 Let $\sum_{k=1}^{10} f(a+k)=16(2^{10}-1)$, where the function f satisfies $f(x+y)=f(x)\,f(y)$ for all natural numbers x, y and $f(1)=2$. Then the natural number 'a' is :

Options

1. 3 ✓
2. 16
3. 4
4. 2

Question Type : **MCQ**
Question ID : **41652913843**
Option 1 ID : **41652954151**
Option 2 ID : **41652954153**
Option 3 ID : **41652954152**
Option 4 ID : **41652954150**
Status : **Not Answered**
Chosen Option : **--**

Q.5 Four persons can hit a target correctly with probabilities $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ and $\frac{1}{8}$ respectively. If all hit at the target independently, then the probability that the target would be hit, is :

Options

1. $\frac{25}{192}$
2. $\frac{7}{32}$
3. $\frac{1}{192}$
4. $\frac{25}{32}$ ✓

Question Type : **MCQ**
Question ID : **41652913861**
Option 1 ID : **41652954225**
Option 2 ID : **41652954224**
Option 3 ID : **41652954223**
Option 4 ID : **41652954222**
Status : **Not Answered**
Chosen Option : **--**

Q.6 The integral $\int \sec^{2/3}x \operatorname{cosec}^{4/3}x \, dx$ is equal to :
(Here C is a constant of integration)

Options

1. $3\tan^{-1/3}x + C$
2. $-\frac{3}{4}\tan^{-4/3}x + C$
3. $-3\tan^{-1/3}x + C$ ✓
4. $-3\cot^{-1/3}x + C$

Question Type : **MCQ**

Question ID : **41652913849**
Option 1 ID : **41652954177**
Option 2 ID : **41652954176**
Option 3 ID : **41652954175**
Option 4 ID : **41652954174**
Status : **Answered**
Chosen Option : **3**

Q.7

Let p, q ∈ **R**. If $2-\sqrt{3}$ is a root of the quadratic equation, $x^2+px+q=0$, then :

Options

1. $p^2-4q+12=0$
2. $q^2+4p+14=0$
3. $p^2-4q-12=0$ ✓
4. $q^2-4p-16=0$

Question Type : **MCQ**
Question ID : **41652913838**
Option 1 ID : **41652954130**
Option 2 ID : **41652954133**
Option 3 ID : **41652954132**
Option 4 ID : **41652954131**
Status : **Answered**
Chosen Option : **1**

Q.8

Let α and β be the roots of the equation $x^2+x+1=0$. Then for $y\neq 0$ in **R**,

$$\begin{vmatrix} y+1 & \alpha & \beta \\ \alpha & y+\beta & 1 \\ \beta & 1 & y+\alpha \end{vmatrix}$$ is equal to :

Options

1. y^3 ✓
2. $y(y^2-1)$
3. y^3-1
4. $y(y^2-3)$

Question Type : **MCQ**
Question ID : **41652913839**
Option 1 ID : **41652954137**
Option 2 ID : **41652954136**
Option 3 ID : **41652954135**
Option 4 ID : **41652954134**
Status : **Answered**
Chosen Option : **1**

Q.9

If a tangent to the circle $x^2+y^2=1$ intersects the coordinate axes at distinct points P and Q, then the locus of the mid-point of PQ is :

Options
1. $x^2+y^2-16x^2y^2=0$
2. $x^2+y^2-4x^2y^2=0$ ✓
3. $x^2+y^2-2xy=0$
4. $x^2+y^2-2x^2y^2=0$

Question Type : **MCQ**
Question ID : **41652913855**
Option 1 ID : **41652954201**
Option 2 ID : **41652954200**
Option 3 ID : **41652954198**
Option 4 ID : **41652954199**
Status : **Answered**
Chosen Option : **4**

Q.10 The value of $\cos^2 10^\circ - \cos 10^\circ \cos 50^\circ + \cos^2 50^\circ$ is :

Options
1. $3/4$ ✓
2. $\frac{3}{4} + \cos 20^\circ$
3. $3/2$
4. $\frac{3}{2}(1+\cos 20^\circ)$

Question Type : **MCQ**
Question ID : **41652913863**
Option 1 ID : **41652954231**
Option 2 ID : **41652954230**
Option 3 ID : **41652954233**
Option 4 ID : **41652954232**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.11 For any two statements p and q, the negation of the expression $p \vee (\sim p \wedge q)$ is :

Options
1. $\sim p \vee \sim q$
2. $p \wedge q$
3. $\sim p \wedge \sim q$ ✓
4. $p \leftrightarrow q$

Question Type : **MCQ**
Question ID : **41652913865**
Option 1 ID : **41652954239**
Option 2 ID : **41652954240**
Option 3 ID : **41652954238**
Option 4 ID : **41652954241**
Status : **Answered**
Chosen Option : **1**

Q.12 If the fourth term in the Binomial expansion of $\left(\frac{2}{x} + x^{\log_8 x}\right)^6$ $(x > 0)$ is 20×8^7, then a value of x is :

Options

1. 8^{-2}
2. 8
3. 8^3
4. 8^2 ✓

Question Type : **MCQ**
Question ID : **41652913844**
Option 1 ID : **41652954157**
Option 2 ID : **41652954155**
Option 3 ID : **41652954156**
Option 4 ID : **41652954154**
Status : **Not Answered**
Chosen Option : **--**

Q.13 The solution of the differential equation $x\frac{dy}{dx} + 2y = x^2$ $(x \neq 0)$ with $y(1) = 1$, is :

Options

1. $y = \frac{x^3}{5} + \frac{1}{5x^2}$
2. $y = \frac{3}{4}x^2 + \frac{1}{4x^2}$
3. $y = \frac{x^2}{4} + \frac{3}{4x^2}$ ✓
4. $y = \frac{4}{5}x^3 + \frac{1}{5x^2}$

Question Type : **MCQ**
Question ID : **41652913852**
Option 1 ID : **41652954189**
Option 2 ID : **41652954186**
Option 3 ID : **41652954188**
Option 4 ID : **41652954187**

Status : **Answered**
Chosen Option : **3**

Q.14

The value of $\int_0^{\pi/2} \frac{\sin^3 x}{\sin x + \cos x} dx$ is :

Options

1. $\frac{\pi-1}{2}$
2. $\frac{\pi-2}{8}$
3. $\frac{\pi-1}{4}$ ✓
4. $\frac{\pi-2}{4}$

Question Type : **MCQ**
Question ID : **41652913850**
Option 1 ID : **41652954178**
Option 2 ID : **41652954180**
Option 3 ID : **41652954179**
Option 4 ID : **41652954181**
Status : **Answered**
Chosen Option : **2**

Q.15

If the tangent to the curve, $y = x^3 + ax - b$ at the point $(1, -5)$ is perpendicular to the line, $-x + y + 4 = 0$, then which one of the following points lies on the curve ?

Options

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

Question Type : **MCQ**
Question ID : **41652913853**
Option 1 ID : **41652954191**
Option 2 ID : **41652954190**
Option 3 ID : **41652954192**
Option 4 ID : **41652954193**
Status : **Answered**
Chosen Option : **1**

Q.16

The area (in sq. units) of the region $A = \{(x, y) : x^2 \le y \le x + 2\}$ is :

Options

1. $\frac{13}{6}$

2. $\frac{31}{6}$

3. $\frac{9}{2}$ ✓

4. $\frac{10}{3}$

Question Type : **MCQ**
Question ID : **41652913851**
Option 1 ID : **41652954184**
Option 2 ID : **41652954182**
Option 3 ID : **41652954185**
Option 4 ID : **41652954183**
Status : **Answered**
Chosen Option : **4**

Q.17 If one end of a focal chord of the parabola, $y^2 = 16x$ is at (1, 4), then the length of this focal chord is :

Options

1. 24

2. 25 ✓

3. 22

4. 20

Question Type : **MCQ**
Question ID : **41652913856**
Option 1 ID : **41652954203**
Option 2 ID : **41652954202**
Option 3 ID : **41652954204**
Option 4 ID : **41652954205**
Status : **Answered**
Chosen Option : **1**

Q.18 All the points in the set $S=\left\{\frac{\alpha+i}{\alpha-i} : \alpha \in \mathbf{R}\right\}$ $(i = \sqrt{-1})$ lie on a :

Options

1. straight line whose slope is -1.

2. circle whose radius is $\sqrt{2}$.

3. circle whose radius is 1. ✓

4. straight line whose slope is 1.

Question Type : **MCQ**
Question ID : **41652913837**
Option 1 ID : **41652954129**
Option 2 ID : **41652954126**

Option 3 ID : **41652954127**
Option 4 ID : **41652954128**
Status : **Answered**
Chosen Option : **1**

Q.19 A plane passing through the points $(0, -1, 0)$ and $(0, 0, 1)$ and making an angle $\frac{\pi}{4}$ with the plane $y - z + 5 = 0$, also passes through the point :

Options

1. $(\sqrt{2}, -1, 4)$
2. $(\sqrt{2}, 1, 4)$ ✓
3. $(-\sqrt{2}, -1, -4)$
4. $(-\sqrt{2}, 1, -4)$

Question Type : **MCQ**
Question ID : **41652913859**
Option 1 ID : **41652954214**
Option 2 ID : **41652954217**
Option 3 ID : **41652954215**
Option 4 ID : **41652954216**
Status : **Answered**
Chosen Option : **4**

Q.20 Slope of a line passing through P(2, 3) and intersecting the line, $x + y = 7$ at a distance of 4 units from P, is :

Options

1. $\frac{\sqrt{7}-1}{\sqrt{7}+1}$
2. $\frac{1-\sqrt{7}}{1+\sqrt{7}}$ ✓
3. $\frac{\sqrt{5}-1}{\sqrt{5}+1}$
4. $\frac{1-\sqrt{5}}{1+\sqrt{5}}$

Question Type : **MCQ**
Question ID : **41652913854**
Option 1 ID : **41652954196**
Option 2 ID : **41652954197**
Option 3 ID : **41652954194**
Option 4 ID : **41652954195**
Status : **Answered**
Chosen Option : **2**

Q.21

If

$$\begin{bmatrix}1 & 1\\ 0 & 1\end{bmatrix}\cdot\begin{bmatrix}1 & 2\\ 0 & 1\end{bmatrix}\cdot\begin{bmatrix}1 & 3\\ 0 & 1\end{bmatrix}\cdot\ldots\ldots\ldots\cdot\begin{bmatrix}1 & n-1\\ 0 & 1\end{bmatrix}=\begin{bmatrix}1 & 78\\ 0 & 1\end{bmatrix},$$

then the inverse of $\begin{bmatrix}1 & n\\ 0 & 1\end{bmatrix}$ is :

Options

1. $\begin{bmatrix}1 & -12\\ 0 & 1\end{bmatrix}$

2. $\begin{bmatrix}1 & 0\\ 12 & 1\end{bmatrix}$

3. $\begin{bmatrix}1 & 0\\ 13 & 1\end{bmatrix}$

4. $\begin{bmatrix}1 & -13\\ 0 & 1\end{bmatrix}$ ✓

Question Type : **MCQ**
Question ID : **41652913840**
Option 1 ID : **41652954141**
Option 2 ID : **41652954138**
Option 3 ID : **41652954139**
Option 4 ID : **41652954140**
Status : **Answered**
Chosen Option : **3**

Q.22

A committee of 11 members is to be formed from 8 males and 5 females. If m is the number of ways the committee is formed with at least 6 males and n is the number of ways the committee is formed with at least 3 females, then :

Options

1. $m=n=68$

2. $n=m-8$

3. $m=n=78$ ✓

4. $m+n=68$

Question Type : **MCQ**
Question ID : **41652913841**
Option 1 ID : **41652954144**
Option 2 ID : **41652954142**
Option 3 ID : **41652954143**
Option 4 ID : **41652954145**
Status : **Answered**
Chosen Option : **1**

Q.23

If the line, $\frac{x-1}{2}=\frac{y+1}{3}=\frac{z-2}{4}$ meets the plane, $x+2y+3z=15$ at a point P, then the distance of P from the origin is :

Options

1. $2\sqrt{5}$
2. $9/2$ ✓
3. $\sqrt{5}/2$
4. $7/2$

Question Type : **MCQ**
Question ID : **41652913858**
Option 1 ID : **41652954212**
Option 2 ID : **41652954211**
Option 3 ID : **41652954213**
Option 4 ID : **41652954210**
Status : **Answered**
Chosen Option : **2**

Q.24

If the standard deviation of the numbers $-1, 0, 1, k$ is $\sqrt{5}$ where $k>0$, then k is equal to :

Options

1. $\sqrt{6}$
2. $4\sqrt{\frac{5}{3}}$
3. $2\sqrt{\frac{10}{3}}$
4. $2\sqrt{6}$ ✓

Question Type : **MCQ**
Question ID : **41652913862**
Option 1 ID : **41652954226**
Option 2 ID : **41652954229**
Option 3 ID : **41652954227**
Option 4 ID : **41652954228**
Status : **Answered**
Chosen Option : **4**

Q.25

Let S be the set of all values of x for which the tangent to the curve $y=f(x)=x^3-x^2-2x$ at (x, y) is parallel to the line segment joining the points $(1, f(1))$ and $(-1, f(-1))$, then S is equal to :

Options

1. $\left\{-\frac{1}{3}, -1\right\}$
2. $\left\{-\frac{1}{3}, 1\right\}$ ✓
3. $\left\{\frac{1}{3}, 1\right\}$
4. $\left\{\frac{1}{3}, -1\right\}$

Question Type : **MCQ**
Question ID : **41652913847**
Option 1 ID : **41652954168**
Option 2 ID : **41652954169**
Option 3 ID : **41652954166**
Option 4 ID : **41652954167**
Status : **Answered**
Chosen Option : **2**

Q.26 Let $S=\{\theta\epsilon[-2\pi, 2\pi] : 2\cos^2\theta+3\sin\theta=0\}$.
Then the sum of the elements of S is :

Options
1. π
2. $\frac{13\pi}{6}$
3. $\frac{5\pi}{3}$
4. 2π ✓

Question Type : **MCQ**
Question ID : **41652913864**
Option 1 ID : **41652954237**
Option 2 ID : **41652954234**
Option 3 ID : **41652954235**
Option 4 ID : **41652954236**
Status : **Answered**
Chosen Option : **4**

Q.27 Let the sum of the first n terms of a non-constant A.P., $a_1, a_2, a_3, \ldots\ldots$ be $50n + \frac{n(n-7)}{2}A$, where A is a constant.
If d is the common difference of this A.P., then the ordered pair (d, a_{50}) is equal to :

Options
1. $(50, 50+46A)$
2. $(A, 50+45A)$

3. $(50, 50+45A)$

4. $(A, 50+46A)$ ✓

Question Type : **MCQ**
Question ID : **41652913842**
Option 1 ID : **41652954146**
Option 2 ID : **41652954148**
Option 3 ID : **41652954149**
Option 4 ID : **41652954147**
Status : **Answered**
Chosen Option : **4**

Q.28 If the function $f: \mathbf{R}-\{1, -1\} \to A$ defined by $f(x) = \frac{x^2}{1-x^2}$, is surjective, then A is equal to :

Options

1. $[0, \infty)$

2. $\mathbf{R}-\{-1\}$

3. $\mathbf{R}-[-1, 0)$ ✓

4. $\mathbf{R}-(-1, 0)$

Question Type : **MCQ**
Question ID : **41652913836**
Option 1 ID : **41652954125**
Option 2 ID : **41652954123**
Option 3 ID : **41652954122**
Option 4 ID : **41652954124**
Status : **Answered**
Chosen Option : **3**

Q.29 Let $\vec{\alpha} = 3\hat{i} + \hat{j}$ and $\vec{\beta} = 2\hat{i} - \hat{j} + 3\hat{k}$. If $\vec{\beta} = \vec{\beta}_1 - \vec{\beta}_2$, where $\vec{\beta}_1$ is parallel to $\vec{\alpha}$ and $\vec{\beta}_2$ is perpendicular to $\vec{\alpha}$, then $\vec{\beta}_1 \times \vec{\beta}_2$ is equal to :

Options

1. $\frac{1}{2}(-3\hat{i} + 9\hat{j} + 5\hat{k})$ ✓

2. $3\hat{i} - 9\hat{j} - 5\hat{k}$

3. $-3\hat{i} + 9\hat{j} + 5\hat{k}$

4. $\frac{1}{2}(3\hat{i}-9\hat{j}+5\hat{k})$

Question Type : **MCQ**
Question ID : **41652913860**
Option 1 ID : **41652954218**
Option 2 ID : **41652954221**
Option 3 ID : **41652954220**
Option 4 ID : **41652954219**
Status : **Answered**
Chosen Option : **1**

Q.30

If the function f defined on $\left(\frac{\pi}{6}, \frac{\pi}{3}\right)$ by

$$f(x)=\begin{cases}\frac{\sqrt{2}\cos x-1}{\cot x-1}, & x\neq\frac{\pi}{4}\\ k, & x=\frac{\pi}{4}\end{cases}$$

is continuous, then k is equal to :

Options

1. $\frac{1}{2}$ ✓
2. 1
3. 2
4. $\frac{1}{\sqrt{2}}$

Question Type : **MCQ**
Question ID : **41652913845**
Option 1 ID : **41652954159**
Option 2 ID : **41652954160**
Option 3 ID : **41652954158**
Option 4 ID : **41652954161**
Status : **Answered**
Chosen Option : **1**