JEE April 2019

Test Date	09/04/2019
Test Time	2:30 PM - 5:30 PM
Subject	Paper I EH

Section : **Physics**

Q.1 Two cars A and B are moving away from each other in opposite directions. Both the cars are moving with a speed of 20 ms^{-1} with respect to the ground. If an observer in car A detects a frequency 2000 Hz of the sound coming from car B, what is the natural frequency of the sound source in car B ?
(speed of sound in air = 340 ms^{-1})

Options
1. 2150 Hz
2. 2300 Hz
3. 2250 Hz ✓
4. 2060 Hz

Question Type : **MCQ**
Question ID : **41652912889**
Option 1 ID : **41652950337**
Option 2 ID : **41652950334**
Option 3 ID : **41652950336**
Option 4 ID : **41652950335**
Status : **Answered**
Chosen Option : **3**

Q.2 A particle of mass 'm' is moving with speed '2v' and collides with a mass '2m' moving with speed 'v' in the same direction. After collision, the first mass is stopped completely while the second one splits into two particles each of mass 'm', which move at angle 45° with respect to the original direction.

The speed of each of the moving particle will be :

Options
1. $\sqrt{2}\,v$

2. $v/\sqrt{2}$

3. $2\sqrt{2}\,v$ ✓

4. $v/(2\sqrt{2})$

Question Type : **MCQ**
Question ID : **41652912879**
Option 1 ID : **41652950296**
Option 2 ID : **41652950295**
Option 3 ID : **41652950294**
Option 4 ID : **41652950297**
Status : **Answered**
Chosen Option : **3**

Q.3 A convex lens of focal length 20 cm produces images of the same magnification 2 when an object is kept at two distances x_1 and x_2 $(x_1 > x_2)$ from the lens. The ratio of x_1 and x_2 is :

Options

1. 2 : 1

2. 5 : 3

3. 4 : 3

4. 3 : 1 ✓

Question Type : **MCQ**
Question ID : **41652912898**
Option 1 ID : **41652950373**
Option 2 ID : **41652950371**
Option 3 ID : **41652950370**
Option 4 ID : **41652950372**
Status : **Answered**
Chosen Option : **4**

Q.4 The parallel combination of two air filled parallel plate capacitors of capacitance C and nC is connected to a battery of voltage, V. When the capacitors are fully charged, the battery is removed and after that a dielectric material of dielectric constant K is placed between the two plates of the first capacitor. The new potential difference of the combined system is :

Options

1. $\frac{(n+1)V}{(K+n)}$ ✓

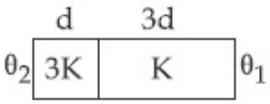
2. $\frac{nV}{K+n}$

3. $\frac{V}{K+n}$

4. V

Question Type : **MCQ**
Question ID : **41652912890**
Option 1 ID : **41652950340**
Option 2 ID : **41652950339**
Option 3 ID : **41652950341**
Option 4 ID : **41652950338**
Status : **Answered**
Chosen Option : **1**

Q.5 Two materials having coefficients of thermal conductivity '3K' and 'K' and thickness 'd' and '3d', respectively, are joined to form a slab as shown in the figure. The temperatures of the outer surfaces are 'θ_2' and 'θ_1' respectively, ($\theta_2 > \theta_1$). The temperature at the interface is :



Options

1. $\frac{\theta_2 + \theta_1}{2}$

2. $\frac{\theta_1}{6} + \frac{5\theta_2}{6}$

3. $\frac{\theta_1}{3} + \frac{2\theta_2}{3}$

4. $\frac{\theta_1}{10} + \frac{9\theta_2}{10}$ ✓

Question Type : **MCQ**
Question ID : **41652912885**
Option 1 ID : **41652950319**
Option 2 ID : **41652950318**
Option 3 ID : **41652950320**
Option 4 ID : **41652950321**
Status : **Answered**
Chosen Option : **4**

Q.6

A metal wire of resistance 3 Ω is elongated to make a uniform wire of double its previous length. This new wire is now bent and the ends joined to make a circle. If two points on this circle make an angle 60° at the centre, the equivalent resistance between these two points will be :

Options

1. $\frac{5}{3}\Omega$ ✓
2. $\frac{12}{5}\Omega$
3. $\frac{7}{2}\Omega$
4. $\frac{5}{2}\Omega$

Question Type : **MCQ**
Question ID : **41652912893**
Option 1 ID : **41652950352**
Option 2 ID : **41652950350**
Option 3 ID : **41652950351**
Option 4 ID : **41652950353**
Status : **Answered**
Chosen Option : **1**

Q.7

Four point charges $-q$, $+q$, $+q$ and $-q$ are placed on y-axis at $y=-2d$, $y=-d$, $y=+d$ and $y=+2d$, respectively. The magnitude of the electric field E at a point on the x-axis at $x=D$, with $D>>d$, will behave as :

Options

1. $E \propto \frac{1}{D^4}$ ✓
2. $E \propto \frac{1}{D}$
3. $E \propto \frac{1}{D^3}$
4. $E \propto \frac{1}{D^2}$

Question Type : **MCQ**
Question ID : **41652912891**
Option 1 ID : **41652950344**
Option 2 ID : **41652950345**
Option 3 ID : **41652950343**
Option 4 ID : **41652950342**

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

Q.8

A particle 'P' is formed due to a completely inelastic collision of particles 'x' and 'y' having de-Broglie wavelengths 'λ_x' and 'λ_y' respectively. If x and y were moving in opposite directions, then the de-Broglie wavelength of 'P' is :

Options

1. $\lambda_x - \lambda_y$
2. $\frac{\lambda_x \lambda_y}{\lambda_x + \lambda_y}$
3. $\frac{\lambda_x \lambda_y}{|\lambda_x - \lambda_y|}$ ✓
4. $\lambda_x + \lambda_y$

Question Type : **MCQ**
Question ID : **41652912900**
Option 1 ID : **41652950379**
Option 2 ID : **41652950381**
Option 3 ID : **41652950380**
Option 4 ID : **41652950378**
Status : **Answered**
Chosen Option : **3**

Q.9

A He^+ ion is in its first excited state. Its ionization energy is :

Options

1. 13.60 eV ✓
2. 48.36 eV
3. 54.40 eV
4. 6.04 eV

Question Type : **MCQ**
Question ID : **41652912901**
Option 1 ID : **41652950382**
Option 2 ID : **41652950383**
Option 3 ID : **41652950384**
Option 4 ID : **41652950385**
Status : **Answered**
Chosen Option : **1**

Q.10

A moving coil galvanometer has a coil with 175 turns and area 1 cm^2. It uses a torsion band of torsion constant 10^{-6} N-m/rad. The coil is placed in a magnetic field B parallel to its plane. The coil deflects by 1° for a current of 1 mA. The value of B (in Tesla) is approximately :

Options

1. 10^{-2}
2. 10^{-4}
3. 10^{-3} ✓
4. 10^{-1}

Question Type : **MCQ**
Question ID : **41652912895**
Option 1 ID : **41652950358**
Option 2 ID : **41652950360**
Option 3 ID : **41652950359**
Option 4 ID : **41652950361**
Status : **Answered**
Chosen Option : **4**

Q.11

The resistance of a galvanometer is 50 ohm and the maximum current which can be passed through it is 0.002 A. What resistance must be connected to it in order to convert it into an ammeter of range 0 – 0.5 A ?

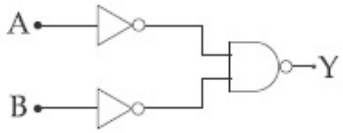
Options

1. 0.2 ohm ✓
2. 0.5 ohm
3. 0.002 ohm
4. 0.02 ohm

Question Type : **MCQ**
Question ID : **41652912904**
Option 1 ID : **41652950396**
Option 2 ID : **41652950397**
Option 3 ID : **41652950394**
Option 4 ID : **41652950395**
Status : **Answered**
Chosen Option : **1**

Q.12

The logic gate equivalent to the given logic circuit is :



Options
1. NAND
2. AND
3. NOR
4. OR ✓

Question Type : **MCQ**
Question ID : **41652912902**
Option 1 ID : **41652950387**
Option 2 ID : **41652950386**
Option 3 ID : **41652950388**
Option 4 ID : **41652950389**
Status : **Answered**
Chosen Option : **4**

Q.13 The position of a particle as a function of time t, is given by

$x(t) = at + bt^2 - ct^3$

where a, b and c are constants. When the particle attains zero acceleration, then its velocity will be :

Options
1. $a + \frac{b^2}{3c}$ ✓
2. $a + \frac{b^2}{2c}$
3. $a + \frac{b^2}{c}$
4. $a + \frac{b^2}{4c}$

Question Type : **MCQ**
Question ID : **41652912877**
Option 1 ID : **41652950287**
Option 2 ID : **41652950288**
Option 3 ID : **41652950289**
Option 4 ID : **41652950286**
Status : **Answered**
Chosen Option : **1**

Q.14

A thin smooth rod of length L and mass M is rotating freely with angular speed ω_0 about an axis perpendicular to the rod and passing through its center. Two beads of mass m and negligible size are at the center of the rod initially. The beads are free to slide along the rod. The angular speed of the system, when the beads reach the opposite ends of the rod, will be :

Options

1. $\frac{M\,\omega_0}{M + 3m}$
2. $\frac{M\,\omega_0}{M + 2m}$
3. $\frac{M\,\omega_0}{M + 6m}$ ✓
4. $\frac{M\,\omega_0}{M + m}$

Question Type : **MCQ**
Question ID : **41652912882**
Option 1 ID : **41652950308**
Option 2 ID : **41652950307**
Option 3 ID : **41652950306**
Option 4 ID : **41652950309**
Status : **Answered**
Chosen Option : **3**

Q.15 The physical sizes of the transmitter and receiver antenna in a communication system are :

Options

1. proportional to carrier frequency
2. independent of both carrier and modulation frequency
3. inversely proportional to modulation frequency
4. inversely proportional to carrier frequency ✓

Question Type : **MCQ**
Question ID : **41652912903**
Option 1 ID : **41652950390**
Option 2 ID : **41652950393**
Option 3 ID : **41652950391**
Option 4 ID : **41652950392**
Status : **Not Answered**

Chosen Option : --

Q.16 The specific heats, C_P and C_V of a gas of diatomic molecules, A, are given (in units of J $mol^{-1}K^{-1}$) by 29 and 22, respectively. Another gas of diatomic molecules, B, has the corresponding values 30 and 21. If they are treated as ideal gases, then :

Options
1. A has one vibrational mode and B has two.
2. A has a vibrational mode but B has none. ✓
3. Both A and B have a vibrational mode each.
4. A is rigid but B has a vibrational mode.

Question Type : **MCQ**
Question ID : **41652912887**
Option 1 ID : **41652950328**
Option 2 ID : **41652950326**
Option 3 ID : **41652950327**
Option 4 ID : **41652950329**
Status : **Not Answered**
Chosen Option : **--**

Q.17 A wooden block floating in a bucket of water has $\frac{4}{5}$ of its volume submerged. When certain amount of an oil is poured into the bucket, it is found that the block is just under the oil surface with half of its volume under water and half in oil. The density of oil relative to that of water is :

Options
1. 0.8
2. 0.7
3. 0.5
4. 0.6 ✓

Question Type : **MCQ**
Question ID : **41652912884**
Option 1 ID : **41652950317**
Option 2 ID : **41652950316**
Option 3 ID : **41652950315**
Option 4 ID : **41652950314**
Status : **Answered**

Chosen Option : **4**

Q.18 The area of a square is 5.29 cm^2. The area of 7 such squares taking into account the significant figures is :

Options
1. 37.03 cm^2
2. 37.030 cm^2 ✓
3. 37.0 cm^2
4. 37 cm^2

Question Type : **MCQ**
Question ID : **41652912876**
Option 1 ID : **41652950282**
Option 2 ID : **41652950285**
Option 3 ID : **41652950283**
Option 4 ID : **41652950284**
Status : **Answered**
Chosen Option : **3**

Q.19 50 W/m^2 energy density of sunlight is normally incident on the surface of a solar panel. Some part of incident energy (25%) is reflected from the surface and the rest is absorbed. The force exerted on 1 m^2 surface area will be close to ($c = 3\times10^8$ m/s) :

Options
1. 15×10^{-8} N
2. 20×10^{-8} N ✓
3. 10×10^{-8} N
4. 35×10^{-8} N

Question Type : **MCQ**
Question ID : **41652912897**
Option 1 ID : **41652950368**
Option 2 ID : **41652950366**
Option 3 ID : **41652950369**
Option 4 ID : **41652950367**
Status : **Answered**
Chosen Option : **2**

Q.20 In a conductor, if the number of conduction electrons per unit volume is 8.5×10^{28} m^{-3} and mean free time is 25 fs (femto second), it's approximate resistivity is :
($m_e = 9.1\times10^{-31}$ kg)

Options
1. 10^{-7} Ωm

2. $10^{-6}\ \Omega m$

3. $10^{-5}\ \Omega m$

4. $10^{-8}\ \Omega m$ ✓

Question Type : **MCQ**
Question ID : **41652912892**
Option 1 ID : **41652950348**
Option 2 ID : **41652950347**
Option 3 ID : **41652950346**
Option 4 ID : **41652950349**
Status : **Not Answered**
Chosen Option : **--**

Q.21 A string 2.0 m long and fixed at its ends is driven by a 240 Hz vibrator. The string vibrates in its third harmonic mode. The speed of the wave and its fundamental frequency is :

Options

1. 320 m/s, 120 Hz

2. 320 m/s, 80 Hz ✓

3. 180 m/s, 80 Hz

4. 180 m/s, 120 Hz

Question Type : **MCQ**
Question ID : **41652912888**
Option 1 ID : **41652950332**
Option 2 ID : **41652950331**
Option 3 ID : **41652950330**
Option 4 ID : **41652950333**
Status : **Answered**
Chosen Option : **2**

Q.22 A wedge of mass M = 4m lies on a frictionless plane. A particle of mass m approaches the wedge with speed v. There is no friction between the particle and the plane or between the particle and the wedge. The maximum height climbed by the particle on the wedge is given by :

Options

1. $\frac{v^2}{g}$

2. $\frac{v^2}{2g}$

3. $\frac{2v^2}{5g}$ ✓

4. $\frac{2v^2}{7g}$

Question Type : **MCQ**
Question ID : **41652912880**
Option 1 ID : **41652950301**
Option 2 ID : **41652950298**
Option 3 ID : **41652950299**
Option 4 ID : **41652950300**
Status : **Answered**
Chosen Option : **3**

Q.23 Moment of inertia of a body about a given axis is 1.5 kg m^2. Initially the body is at rest. In order to produce a rotational kinetic energy of 1200 J, the angular acceleration of 20 rad/s^2 must be applied about the axis for a duration of :

Options

1. 3 s
2. 2 s ✓
3. 2.5 s
4. 5 s

Question Type : **MCQ**
Question ID : **41652912881**
Option 1 ID : **41652950303**
Option 2 ID : **41652950304**
Option 3 ID : **41652950305**
Option 4 ID : **41652950302**
Status : **Answered**
Chosen Option : **2**

Q.24 ✓ Two coils 'P' and 'Q' are separated by some distance. When a current of 3 A flows through coil 'P', a magnetic flux of 10^{-3} Wb passes through 'Q'. No current is passed through 'Q'. When no current passes through 'P' and a current of 2 A passes through 'Q', the flux through 'P' is :

Options

1. 3.67×10^{-3} Wb
2. 6.67×10^{-4} Wb ✓
3. 3.67×10^{-4} Wb
4. 6.67×10^{-3} Wb

Question Type : **MCQ**
Question ID : **41652912896**
Option 1 ID : **41652950365**
Option 2 ID : **41652950362**
Option 3 ID : **41652950364**
Option 4 ID : **41652950363**
Status : **Answered**
Chosen Option : **2**

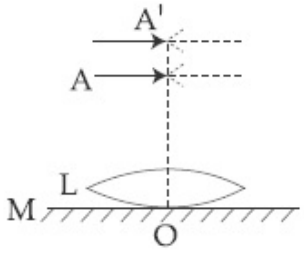
Q.25 A test particle is moving in a circular orbit in the gravitational field produced by a mass density $\rho(r) = \frac{K}{r^2}$. Identify the correct relation between the radius R of the particle's orbit and its period T :

Options

1. TR is a constant
2. T^2/R^3 is a constant
3. T/R is a constant ✓
4. T/R^2 is a constant

Question Type : **MCQ**
Question ID : **41652912883**
Option 1 ID : **41652950312**
Option 2 ID : **41652950310**
Option 3 ID : **41652950313**
Option 4 ID : **41652950311**
Status : **Answered**
Chosen Option : **3**

Q.26 A thin convex lens L (refractive index = 1.5) is placed on a plane mirror M. When a pin is placed at A, such that OA = 18 cm, its real inverted image is formed at A itself, as shown in figure. When a liquid of refractive index μ_l is put between the lens and the mirror, the pin has to be moved to A', such that OA' = 27 cm, to get its inverted real image at A' itself. The value of μ_l will be :



Options

1. $\frac{4}{3}$ ✓

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

Question Type : **MCQ**
Question ID : **41652912905**
Option 1 ID : **41652950400**
Option 2 ID : **41652950399**
Option 3 ID : **41652950398**
Option 4 ID : **41652950401**
Status : **Not Answered**
Chosen Option : **--**

Q.27 Diameter of the objective lens of a telescope is 250 cm. For light of wavelength 600 nm. coming from a distant object, the limit of resolution of the telescope is close to :

Options
1. 1.5×10^{-7} rad
2. 3.0×10^{-7} rad ✓
3. 2.0×10^{-7} rad
4. 4.5×10^{-7} rad

Question Type : **MCQ**
Question ID : **41652912899**
Option 1 ID : **41652950377**
Option 2 ID : **41652950374**
Option 3 ID : **41652950376**
Option 4 ID : **41652950375**
Status : **Answered**
Chosen Option : **2**

Q.28 The position vector of a particle changes with time according to the relation $\vec{r}(t) = 15t^2\hat{i} + (4-20t^2)\hat{j}$. What is the magnitude of the acceleration at $t=1$?

Options
1. 40
2. 25
3. 100
4. 50 ✓

Question Type : **MCQ**
Question ID : **41652912878**
Option 1 ID : **41652950291**
Option 2 ID : **41652950290**

Option 3 ID : **41652950293**
Option 4 ID : **41652950292**
Status : **Answered**
Chosen Option : **4**

Q.29 A massless spring (k = 800 N/m), attached with a mass (500 g) is completely immersed in 1 kg of water. The spring is stretched by 2 cm and released so that it starts vibrating. What would be the order of magnitude of the change in the temperature of water when the vibrations stop completely ? (Assume that the water container and spring receive negligible heat and specific heat of mass = 400 J/kg K, specific heat of water = 4184 J/kg K)

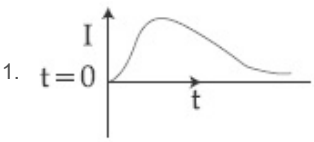
Options

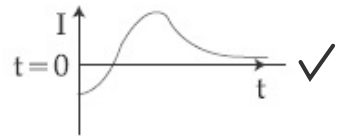
1. 10^{-5} K ✓
2. 10^{-1} K
3. 10^{-3} K
4. 10^{-4} K

Question Type : **MCQ**
Question ID : **41652912886**
Option 1 ID : **41652950322**
Option 2 ID : **41652950323**
Option 3 ID : **41652950324**
Option 4 ID : **41652950325**
Status : **Answered**
Chosen Option : **1**

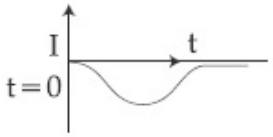
Q.30 A very long solenoid of radius R is carrying current $I(t) = kte^{-\alpha t}$ ($k>0$), as a function of time ($t \geq 0$). Counter clockwise current is taken to be positive. A circular conducting coil of radius 2R is placed in the equatorial plane of the solenoid and concentric with the solenoid. The current induced in the outer coil is correctly depicted, as a function of time, by :

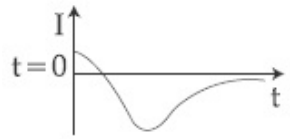
Options

1. 

2. 

✓

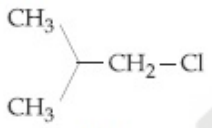
3. 

4. 

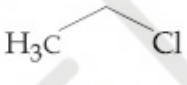
Question Type : **MCQ**
Question ID : **41652912894**
Option 1 ID : **41652950356**
Option 2 ID : **41652950354**
Option 3 ID : **41652950357**
Option 4 ID : **41652950355**
Status : **Answered**
Chosen Option : **4**

Section : **Chemistry**

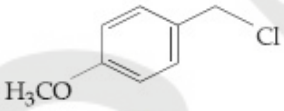
Q.1 Increasing order of reactivity of the following compounds for S_N1 substitution is :



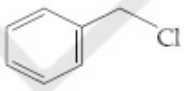
(A)



(B)



(C)



(D)

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

Question Type : **MCQ**
Question ID : **41652912907**
Option 1 ID : **41652950409**
Option 2 ID : **41652950408**
Option 3 ID : **41652950407**
Option 4 ID : **41652950406**
Status : **Answered**
Chosen Option : **2**

Q.2 The correct statements among I to III regarding group 13 element oxides are,

(I) Boron trioxide is acidic.

(II) Oxides of aluminium and gallium are amphoteric.

(III) Oxides of indium and thallium are basic.

Options

1. (I) and (III) only
2. (I) and (II) only
3. (I), (II) and (III) ✓
4. (II) and (III) only

Question Type : **MCQ**
Question ID : **41652912921**
Option 1 ID : **41652950462**
Option 2 ID : **41652950464**
Option 3 ID : **41652950465**
Option 4 ID : **41652950463**
Status : **Answered**
Chosen Option : **3**

Q.3 The amorphous form of silica is :

Options

1. quartz
2. kieselguhr ✓
3. tridymite
4. cristobalite

Question Type : **MCQ**
Question ID : **41652912920**
Option 1 ID : **41652950458**
Option 2 ID : **41652950461**
Option 3 ID : **41652950460**
Option 4 ID : **41652950459**
Status : **Answered**
Chosen Option : **2**

Q.4 HF has highest boiling point among hydrogen halides, because it has :

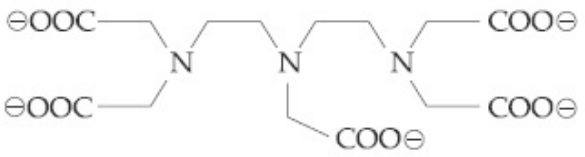
Options

1. lowest dissociation enthalpy
2. strongest van der Waals' interactions
3. strongest hydrogen bonding ✓
4. lowest ionic character

Question Type : **MCQ**
Question ID : **41652912918**

Option 1 ID : **41652950451**
Option 2 ID : **41652950453**
Option 3 ID : **41652950452**
Option 4 ID : **41652950450**
Status : **Answered**
Chosen Option : **3**

Q.5 The maximum possible denticities of a ligand given below towards a common transition and inner-transition metal ion, respectively, are :



Options
1. 8 and 6
2. 6 and 6
3. 8 and 8
4. 6 and 8 ✓

Question Type : **MCQ**
Question ID : **41652912924**
Option 1 ID : **41652950477**
Option 2 ID : **41652950474**
Option 3 ID : **41652950476**
Option 4 ID : **41652950475**
Status : **Answered**
Chosen Option : **3**

Q.6 Molal depression constant for a solvent is 4.0 K kg mol^{-1}. The depression in the freezing point of the solvent for 0.03 mol kg^{-1} solution of K_2SO_4 is :
(Assume complete dissociation of the electrolyte)

Options
1. 0.36 K ✓
2. 0.24 K
3. 0.18 K
4. 0.12 K

Question Type : **MCQ**
Question ID : **41652912931**
Option 1 ID : **41652950503**
Option 2 ID : **41652950502**
Option 3 ID : **41652950505**
Option 4 ID : **41652950504**
Status : **Answered**
Chosen Option : **1**

Q.7 During compression of a spring the work done is 10 kJ and 2 kJ escaped to the surroundings as heat. The change in internal energy, ΔU (in kJ) is :

Options

1. -8
2. 8 ✓
3. 12
4. -12

Question Type : **MCQ**
Question ID : **41652912930**
Option 1 ID : **41652950500**
Option 2 ID : **41652950498**
Option 3 ID : **41652950501**
Option 4 ID : **41652950499**
Status : **Answered**
Chosen Option : **2**

Q.8 The maximum number of possible oxidation states of actinoides are shown by :

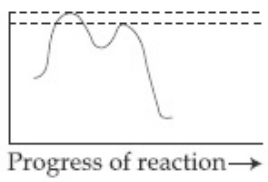
Options

1. nobelium (No) and lawrencium (Lr)
2. berkelium (Bk) and californium (Cf)
3. actinium (Ac) and thorium (Th)
4. neptunium (Np) and plutonium (Pu) ✓

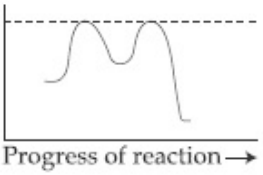
Question Type : **MCQ**
Question ID : **41652912922**
Option 1 ID : **41652950469**
Option 2 ID : **41652950468**
Option 3 ID : **41652950466**
Option 4 ID : **41652950467**
Status : **Not Answered**
Chosen Option : **--**

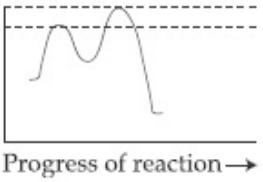
Q.9 Which of the following potential energy (PE) diagrams represents the S_N1 reaction ?

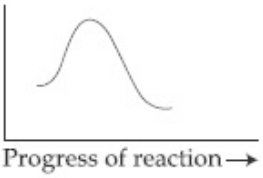
Options

1. 

✓

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **41652912913**
Option 1 ID : **41652950432**
Option 2 ID : **41652950433**
Option 3 ID : **41652950430**
Option 4 ID : **41652950431**
Status : **Answered**
Chosen Option : **1**

Q.10 The layer of atmosphere between 10 km to 50 km above the sea level is called as :

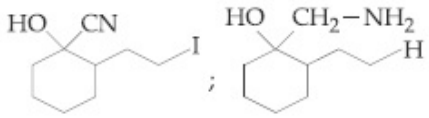
Options

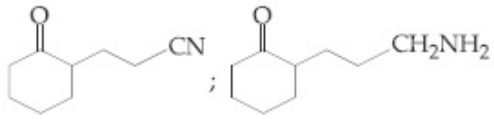
1. stratosphere ✓
2. troposphere
3. mesosphere
4. thermosphere

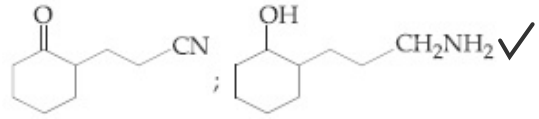
Question Type : **MCQ**
Question ID : **41652912925**
Option 1 ID : **41652950478**
Option 2 ID : **41652950479**
Option 3 ID : **41652950480**
Option 4 ID : **41652950481**
Status : **Answered**
Chosen Option : **1**

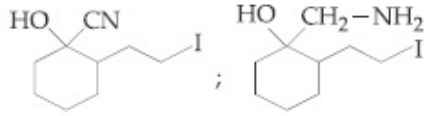
Q.11 The major products A and B for the following reactions are, respectively :

Options

1. 

2. 

3.  ✓

4. 

Question Type : **MCQ**
Question ID : **41652912912**
Option 1 ID : **41652950429**
Option 2 ID : **41652950426**
Option 3 ID : **41652950427**
Option 4 ID : **41652950428**
Status : **Answered**
Chosen Option : **4**

Q.12 The structures of beryllium chloride in the solid state and vapour phase, respectively, are :

Options
1. chain and chain
2. dimeric and chain
3. chain and dimeric ✓
4. dimeric and dimeric

Question Type : **MCQ**
Question ID : **41652912919**
Option 1 ID : **41652950457**
Option 2 ID : **41652950454**
Option 3 ID : **41652950455**
Option 4 ID : **41652950456**
Status : **Answered**
Chosen Option : **3**

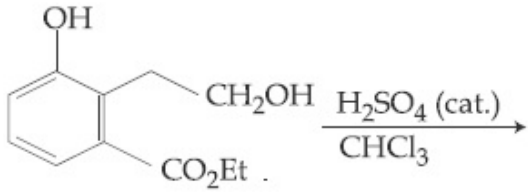
Q.13 Noradrenaline is a /an :

Options
1. Antihistamine
2. Neurotransmitter ✓
3. Antacid
4. Antidepressant

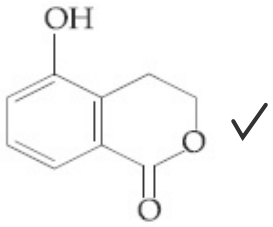
Question Type : **MCQ**
Question ID : **41652912908**
Option 1 ID : **41652950411**
Option 2 ID : **41652950412**
Option 3 ID : **41652950410**
Option 4 ID : **41652950413**

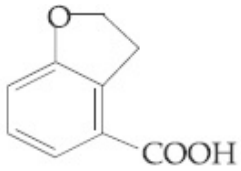
Status : **Answered**
Chosen Option : **4**

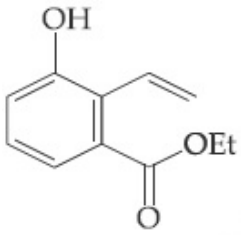
Q.14 The major product of the following reaction is :

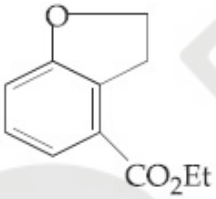


Options

1.  ✓

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **41652912909**
Option 1 ID : **41652950414**
Option 2 ID : **41652950417**
Option 3 ID : **41652950416**
Option 4 ID : **41652950415**
Status : **Answered**
Chosen Option : **1**

Q.15 A solution of $Ni(NO_3)_2$ is electrolysed between platinum electrodes using 0.1 Faraday electricity. How many mole of Ni will be deposited at the cathode ?

Options

1. 0.10
2. 0.15

3. 0.05 ✓
4. 0.20

Question Type : **MCQ**
Question ID : **41652912933**
Option 1 ID : **41652950510**
Option 2 ID : **41652950513**
Option 3 ID : **41652950511**
Option 4 ID : **41652950512**
Status : **Answered**
Chosen Option : **3**

Q.16 At a given temperature T, gases Ne, Ar, Xe and Kr are found to deviate from ideal gas behaviour. Their equation of state is given as $p = \frac{RT}{V-b}$ at T.

Here, b is the van der Waals constant. Which gas will exhibit steepest increase in the plot of Z (compression factor) vs p ?

Options
1. Ne
2. Kr
3. Ar
4. Xe ✓

Question Type : **MCQ**
Question ID : **41652912927**
Option 1 ID : **41652950486**
Option 2 ID : **41652950489**
Option 3 ID : **41652950487**
Option 4 ID : **41652950488**
Status : **Answered**
Chosen Option : **4**

Q.17 In the following reaction

$$\text{carbonyl compound} + \text{MeOH} \xrightleftharpoons{HCl} \text{acetal}$$

Rate of the reaction is the highest for :

Options
1. Acetone as substrate and methanol in stoichiometric amount
2. Acetone as substrate and methanol in excess
3. Propanal as substrate and methanol in stoichiometric amount
4. Propanal as substrate and methanol in excess ✓

Question Type : **MCQ**
Question ID : **41652912911**
Option 1 ID : **41652950424**
Option 2 ID : **41652950422**
Option 3 ID : **41652950425**
Option 4 ID : **41652950423**
Status : **Answered**
Chosen Option : **2**

Q.18 Among the following species, the diamagnetic molecule is :

Options
1. CO ✓
2. B_2
3. O_2
4. NO

Question Type : **MCQ**
Question ID : **41652912929**
Option 1 ID : **41652950495**
Option 2 ID : **41652950497**
Option 3 ID : **41652950496**
Option 4 ID : **41652950494**
Status : **Answered**
Chosen Option : **1**

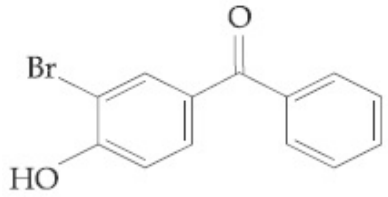
Q.19 10 mL of 1 mM surfactant solution forms a monolayer covering 0.24 cm^2 on a polar substrate. If the polar head is approximated as a cube, what is its edge length ?

Options
1. 1.0 pm
2. 0.1 nm
3. 2.0 pm ✓
4. 2.0 nm

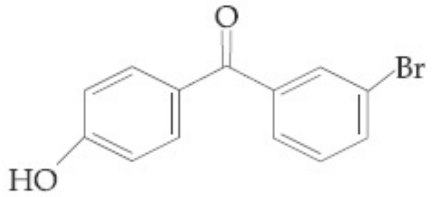
Question Type : **MCQ**
Question ID : **41652912935**
Option 1 ID : **41652950520**
Option 2 ID : **41652950518**
Option 3 ID : **41652950519**
Option 4 ID : **41652950521**
Status : **Not Answered**
Chosen Option : **--**

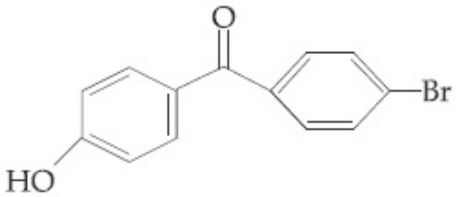
Q.20 p-Hydroxybenzophenone upon reaction with bromine in carbon tetrachloride gives :

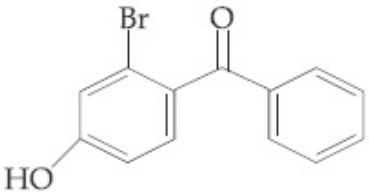
Options

1. 

✓

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **41652912910**
Option 1 ID : **41652950420**
Option 2 ID : **41652950421**
Option 3 ID : **41652950419**
Option 4 ID : **41652950418**
Status : **Answered**
Chosen Option : **1**

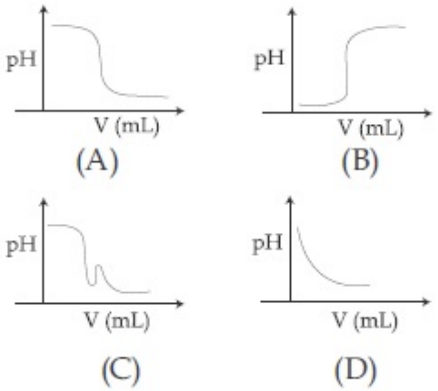
Q.21 Hinsberg's reagent is :

Options
1. $C_6H_5SO_2Cl$ ✓
2. $SOCl_2$
3. $(COCl)_2$
4. C_6H_5COCl

Question Type : **MCQ**
Question ID : **41652912915**
Option 1 ID : **41652950441**
Option 2 ID : **41652950439**
Option 3 ID : **41652950440**
Option 4 ID : **41652950438**
Status : **Answered**
Chosen Option : **1**

Q.22

In an acid-base titration, 0.1 M HCl solution was added to the NaOH solution of unknown strength. Which of the following **correctly** shows the change of pH of the titration mixture in this experiment?



Options

1. (A) ✓
2. (B)
3. (D)
4. (C)

Question Type : **MCQ**
Question ID : **41652912932**
Option 1 ID : **41652950506**
Option 2 ID : **41652950507**
Option 3 ID : **41652950509**
Option 4 ID : **41652950508**
Status : **Answered**
Chosen Option : **1**

Q.23 The peptide that gives positive ceric ammonium nitrate and carbylamine tests is :

Options

1. Gln - Asp
2. Asp - Gln
3. Lys - Asp
4. Ser - Lys ✓

Question Type : **MCQ**
Question ID : **41652912914**
Option 1 ID : **41652950436**
Option 2 ID : **41652950437**
Option 3 ID : **41652950435**
Option 4 ID : **41652950434**
Status : **Not Answered**
Chosen Option : **--**

Q.24

Which of the following compounds is a constituent of the polymer $+\left[HN-\overset{\overset{O}{\|}}{C}-NH-CH_2\right]_n+$?

Options

1. Methylamine
2. Ammonia
3. Formaldehyde ✓
4. N-Methyl urea

Question Type : **MCQ**
Question ID : **41652912906**
Option 1 ID : **41652950402**
Option 2 ID : **41652950404**
Option 3 ID : **41652950405**
Option 4 ID : **41652950403**
Status : **Answered**
Chosen Option : **3**

Q.25 Which one of the following about an electron occupying the 1s orbital in a hydrogen atom is **incorrect** ? (The Bohr radius is represented by a_0).

Options

1. The total energy of the electron is maximum when it is at a distance a_0 from the nucleus. ✓
2. The electron can be found at a distance $2a_0$ from the nucleus.
3. The probability density of finding the electron is maximum at the nucleus.
4. The magnitude of the potential energy is double that of its kinetic energy on an average.

Question Type : **MCQ**
Question ID : **41652912928**
Option 1 ID : **41652950491**
Option 2 ID : **41652950490**
Option 3 ID : **41652950492**
Option 4 ID : **41652950493**
Status : **Answered**
Chosen Option : **2**

Q.26 The one that is **not** a carbonate ore is :

Options

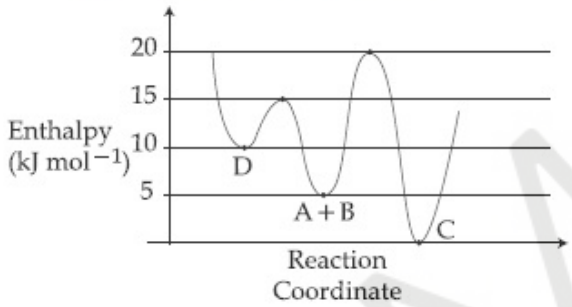
1. malachite

2. bauxite ✓
3. calamine
4. siderite

Question Type : **MCQ**
Question ID : **41652912917**
Option 1 ID : **41652950448**
Option 2 ID : **41652950446**
Option 3 ID : **41652950447**
Option 4 ID : **41652950449**
Status : **Answered**
Chosen Option : **4**

Q.27 Consider the given plot of enthalpy of the following reaction between A and B.
$A + B \rightarrow C + D$.

Identify the **incorrect** statement.



Options

1. Formation of A and B from C has highest enthalpy of activation.
2. D is kinetically stable product.
3. C is the thermodynamically stable product.
4. Activation enthalpy to form C is 5 kJ mol^{-1} less than that to form D. ✓

Question Type : **MCQ**
Question ID : **41652912934**
Option 1 ID : **41652950517**
Option 2 ID : **41652950515**
Option 3 ID : **41652950514**
Option 4 ID : **41652950516**
Status : **Answered**
Chosen Option : **4**

Q.28

The correct statements among I to III are :

(I) Valence bond theory cannot explain the color exhibited by transition metal complexes.

(II) Valence bond theory can predict quantitatively the magnetic properties of transition metal complexes.

(III) Valence bond theory cannot distinguish ligands as weak and strong field ones.

Options
1. (I) and (II) only
2. (II) and (III) only
3. (I) and (III) only ✓
4. (I), (II) and (III)

Question Type : **MCQ**
Question ID : **41652912923**
Option 1 ID : **41652950470**
Option 2 ID : **41652950472**
Option 3 ID : **41652950471**
Option 4 ID : **41652950473**
Status : **Answered**
Chosen Option : **1**

Q.29 What would be the molality of 20% (mass/mass) aqueous solution of KI ?
(molar mass of KI = 166 g mol^{-1})

Options
1. 1.35
2. 1.51 ✓
3. 1.08
4. 1.48

Question Type : **MCQ**
Question ID : **41652912926**
Option 1 ID : **41652950483**
Option 2 ID : **41652950482**
Option 3 ID : **41652950484**
Option 4 ID : **41652950485**
Status : **Answered**
Chosen Option : **2**

Q.30

Assertion :

For the extraction of iron, haematite ore is used.

Reason :

Haematite is a carbonate ore of iron.

Options

1. Only the assertion is correct. ✓
2. Only the reason is correct.
3. Both the assertion and reason are correct and the reason is the correct explanation for the assertion.
4. Both the assertion and reason are correct, but the reason is not the correct explanation for the assertion.

Question Type : **MCQ**
Question ID : **41652912916**
Option 1 ID : **41652950442**
Option 2 ID : **41652950443**
Option 3 ID : **41652950444**
Option 4 ID : **41652950445**
Status : **Answered**
Chosen Option : **1**

Section : **Mathematics**

Q.1 The total number of matrices

$$A=\begin{pmatrix} 0 & 2y & 1 \\ 2x & y & -1 \\ 2x & -y & 1 \end{pmatrix}, \ (x,\ y\in\mathbf{R},\ x\neq y)$$ for which $A^TA=3I_3$ is :

Options

1. 6
2. 3
3. 4 ✓
4. 2

Question Type : **MCQ**
Question ID : **41652912939**
Option 1 ID : **41652950536**
Option 2 ID : **41652950537**
Option 3 ID : **41652950535**
Option 4 ID : **41652950534**
Status : **Answered**
Chosen Option : **3**

Q.2

If $p \Rightarrow (q \vee r)$ is false, then the truth values of p, q, r are respectively :

Options
1. T, F, F ✓
2. F, T, T
3. F, F, F
4. T, T, F

Question Type : **MCQ**
Question ID : **41652912965**
Option 1 ID : **41652950640**
Option 2 ID : **41652950638**
Option 3 ID : **41652950641**
Option 4 ID : **41652950639**
Status : **Answered**
Chosen Option : **1**

Q.3 The vertices B and C of a ΔABC lie on the line, $\frac{x+2}{3} = \frac{y-1}{0} = \frac{z}{4}$ such that $BC = 5$ units. Then the area (in sq. units) of this triangle, given that the point A(1, −1, 2), is :

Options
1. 6
2. $2\sqrt{34}$
3. $\sqrt{34}$ ✓
4. $5\sqrt{17}$

Question Type : **MCQ**
Question ID : **41652912959**
Option 1 ID : **41652950616**
Option 2 ID : **41652950617**
Option 3 ID : **41652950615**
Option 4 ID : **41652950614**
Status : **Answered**
Chosen Option : **4**

Q.4 A rectangle is inscribed in a circle with a diameter lying along the line $3y = x + 7$. If the two adjacent vertices of the rectangle are $(-8, 5)$ and $(6, 5)$, then the area of the rectangle (in sq. units) is :

Options
1. 72
2. 98
3. 56
4. 84 ✓

Question Type : **MCQ**
Question ID : **41652912954**
Option 1 ID : **41652950595**
Option 2 ID : **41652950597**
Option 3 ID : **41652950594**
Option 4 ID : **41652950596**
Status : **Not Answered**
Chosen Option : **--**

Q.5 The sum of the series $1+2\times3+3\times5+4\times7+....$ upto 11^{th} term is :

Options
1. 945
2. 916
3. 946 ✓
4. 915

Question Type : **MCQ**
Question ID : **41652912944**
Option 1 ID : **41652950555**
Option 2 ID : **41652950554**
Option 3 ID : **41652950556**
Option 4 ID : **41652950557**
Status : **Answered**
Chosen Option : **3**

Q.6 A water tank has the shape of an inverted right circular cone, whose semi-vertical angle is $\tan^{-1}\left(\frac{1}{2}\right)$. Water is poured into it at a constant rate of 5 cubic meter per minute. Then the rate (in m/min.), at which the level of water is rising at the instant when the depth of water in the tank is 10 m; is :

Options
1. $1/10\pi$
2. $1/15\pi$
3. $1/5\pi$ ✓
4. $2/\pi$

Question Type : **MCQ**
Question ID : **41652912948**
Option 1 ID : **41652950573**
Option 2 ID : **41652950570**
Option 3 ID : **41652950572**
Option 4 ID : **41652950571**
Status : **Answered**
Chosen Option : **3**

Q.7

If $\cos x \frac{dy}{dx} - y\sin x = 6x$, $(0 < x < \frac{\pi}{2})$ and $y\left(\frac{\pi}{3}\right)=0$, then $y\left(\frac{\pi}{6}\right)$ is equal to :

Options

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

Question Type : **MCQ**
Question ID : **41652912952**
Option 1 ID : **41652950588**
Option 2 ID : **41652950589**
Option 3 ID : **41652950586**
Option 4 ID : **41652950587**
Status : **Answered**
Chosen Option : **4**

Q.8

Two newspapers A and B are published in a city. It is known that 25% of the city population reads A and 20% reads B while 8% reads both A and B. Further, 30% of those who read A but not B look into advertisements and 40% of those who read B but not A also look into advertisements, while 50% of those who read both A and B look into advertisements. Then the percentage of the population who look into advertisements is :

Options

1. 13.5
2. 12.8
3. 13.9 ✓
4. 13

Question Type : **MCQ**
Question ID : **41652912962**
Option 1 ID : **41652950628**
Option 2 ID : **41652950626**
Option 3 ID : **41652950629**
Option 4 ID : **41652950627**
Status : **Not Answered**

Chosen Option : --

Q.9 If

$$\int e^{\sec x}(\sec x \tan x\, f(x)+(\sec x \tan x+\sec^2 x))dx$$

$$=e^{\sec x} f(x)+C,$$ then a possible choice of $f(x)$ is :

Options

1. $\sec x-\tan x-\frac{1}{2}$
2. $\sec x+\tan x+\frac{1}{2}$ ✓
3. $x\sec x+\tan x+\frac{1}{2}$
4. $\sec x+x\tan x-\frac{1}{2}$

Question Type : **MCQ**
Question ID : **41652912949**
Option 1 ID : **41652950574**
Option 2 ID : **41652950575**
Option 3 ID : **41652950576**
Option 4 ID : **41652950577**
Status : **Not Answered**
Chosen Option : **--**

Q.10 The common tangent to the circles $x^2+y^2=4$ and $x^2+y^2+6x+8y-24=0$ also passes through the point :

Options

1. $(4, -2)$
2. $(-4, 6)$
3. $(6, -2)$ ✓
4. $(-6, 4)$

Question Type : **MCQ**
Question ID : **41652912955**
Option 1 ID : **41652950600**
Option 2 ID : **41652950601**
Option 3 ID : **41652950599**
Option 4 ID : **41652950598**
Status : **Answered**
Chosen Option : **3**

Q.11

If the system of equations $2x+3y-z=0$, $x+ky-2z=0$ and $2x-y+z=0$ has a non-trivial solution (x, y, z), then $\frac{x}{y}+\frac{y}{z}+\frac{z}{x}+k$ is equal to :

Options

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

Question Type : **MCQ**
Question ID : **41652912940**
Option 1 ID : **41652950540**
Option 2 ID : **41652950541**
Option 3 ID : **41652950539**
Option 4 ID : **41652950538**
Status : **Not Answered**
Chosen Option : **--**

Q.12 Some identical balls are arranged in rows to form an equilateral triangle. The first row consists of one ball, the second row consists of two balls and so on. If 99 more identical balls are added to the total number of balls used in forming the equilateral triangle, then all these balls can be arranged in a square whose each side contains exactly 2 balls less than the number of balls each side of the triangle contains. Then the number of balls used to form the equilateral triangle is :

Options

1. 262
2. 190 ✓
3. 225
4. 157

Question Type : **MCQ**
Question ID : **41652912941**
Option 1 ID : **41652950543**
Option 2 ID : **41652950544**
Option 3 ID : **41652950545**
Option 4 ID : **41652950542**
Status : **Answered**
Chosen Option : **3**

Q.13 The value of the integral

$$\int_0^1 x \cot^{-1}(1-x^2+x^4)\,dx \text{ is :}$$

Options

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

Question Type : **MCQ**
Question ID : **41652912950**
Option 1 ID : **41652950578**
Option 2 ID : **41652950580**
Option 3 ID : **41652950579**
Option 4 ID : **41652950581**
Status : **Answered**
Chosen Option : **1**

Q.14 The area (in sq. units) of the smaller of the two circles that touch the parabola, $y^2=4x$ at the point (1, 2) and the x-axis is :

Options

1. $8\pi\,(3-2\sqrt{2})$ ✓
2. $8\pi\,(2-\sqrt{2})$
3. $4\pi\,(3+\sqrt{2})$
4. $4\pi\,(2-\sqrt{2})$

Question Type : **MCQ**
Question ID : **41652912956**
Option 1 ID : **41652950604**
Option 2 ID : **41652950603**
Option 3 ID : **41652950602**
Option 4 ID : **41652950605**
Status : **Not Answered**
Chosen Option : **--**

Q.15 If $f(x)=[x]-\left[\frac{x}{4}\right]$, $x \in \mathbf{R}$, where $[x]$ denotes the greatest integer function, then :

Options

1. $\lim_{x\to 4+} f(x)$ exists but $\lim_{x\to 4-} f(x)$ does not exist.

2. f is continuous at $x=4$. ✓

3. $\lim_{x\to 4-} f(x)$ exists but $\lim_{x\to 4+} f(x)$ does not exist.

4. Both $\lim_{x\to 4-} f(x)$ and $\lim_{x\to 4+} f(x)$ exist but are not equal.

Question Type : **MCQ**
Question ID : **41652912947**
Option 1 ID : **41652950566**
Option 2 ID : **41652950569**
Option 3 ID : **41652950567**
Option 4 ID : **41652950568**
Status : **Answered**
Chosen Option : **2**

Q.16 The area (in sq. units) of the region $A=\{(x, y): \frac{y^2}{2} \le x \le y+4\}$ is :

Options

1. 30
2. 18 ✓
3. $\frac{53}{3}$
4. 16

Question Type : **MCQ**
Question ID : **41652912951**
Option 1 ID : **41652950583**
Option 2 ID : **41652950582**
Option 3 ID : **41652950585**
Option 4 ID : **41652950584**
Status : **Answered**
Chosen Option : **4**

Q.17 If m is chosen in the quadratic equation $(m^2+1)x^2-3x+(m^2+1)^2=0$ such that the sum of its roots is greatest, then the absolute difference of the cubes of its roots is :

Options

1. $4\sqrt{3}$
2. $10\sqrt{5}$
3. $8\sqrt{3}$
4. $8\sqrt{5}$ ✓

Question Type : **MCQ**
Question ID : **41652912938**
Option 1 ID : **41652950531**

Option 2 ID : **41652950532**
Option 3 ID : **41652950533**
Option 4 ID : **41652950530**
Status : **Not Answered**
Chosen Option : **--**

Q.18

Let $z \in C$ be such that $|z| < 1$. If $\omega = \frac{5+3z}{5(1-z)}$,

then :

Options

1. $5\ \mathrm{Re}(\omega) > 1$ ✓
2. $5\ \mathrm{Im}(\omega) < 1$
3. $5\ \mathrm{Re}(\omega) > 4$
4. $4\ \mathrm{Im}(\omega) > 5$

Question Type : **MCQ**
Question ID : **41652912937**
Option 1 ID : **41652950527**
Option 2 ID : **41652950529**
Option 3 ID : **41652950526**
Option 4 ID : **41652950528**
Status : **Not Answered**
Chosen Option : **--**

Q.19

If the function $f(x) = \begin{cases} a|\pi - x| + 1, & x \le 5 \\ b|x - \pi| + 3, & x > 5 \end{cases}$

is continuous at $x = 5$, then the value of $a - b$ is :

Options

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

Question Type : **MCQ**
Question ID : **41652912946**
Option 1 ID : **41652950564**
Option 2 ID : **41652950565**
Option 3 ID : **41652950563**
Option 4 ID : **41652950562**
Status : **Answered**
Chosen Option : **1**

Q.20

If a unit vector $\vec{a}$ makes angles $\pi/3$ with $\hat{i}$, $\pi/4$ with $\hat{j}$ and $\theta \in (0, \pi)$ with $\hat{k}$, then a value of θ is :

Options

1. $\frac{5\pi}{6}$
2. $\frac{5\pi}{12}$
3. $\frac{\pi}{4}$
4. $\frac{2\pi}{3}$ ✓

Question Type : **MCQ**
Question ID : **41652912960**
Option 1 ID : **41652950621**
Option 2 ID : **41652950618**
Option 3 ID : **41652950620**
Option 4 ID : **41652950619**
Status : **Answered**
Chosen Option : **4**

Q.21 The value of $\sin 10° \sin 30° \sin 50° \sin 70°$ is :

Options

1. $\frac{1}{36}$
2. $\frac{1}{16}$ ✓
3. $\frac{1}{18}$
4. $\frac{1}{32}$

Question Type : **MCQ**
Question ID : **41652912963**
Option 1 ID : **41652950633**
Option 2 ID : **41652950631**
Option 3 ID : **41652950632**
Option 4 ID : **41652950630**
Status : **Answered**
Chosen Option : **2**

Q.22 If the two lines $x + (a-1)y = 1$ and $2x + a^2y = 1$ $(a \in \mathbf{R} - \{0, 1\})$ are perpendicular, then the distance of their point of intersection from the origin is :

Options

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

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

3. $\frac{2}{5}$

4. $\sqrt{\frac{2}{5}}$ ✓

Question Type : **MCQ**
Question ID : **41652912953**
Option 1 ID : **41652950591**
Option 2 ID : **41652950590**
Option 3 ID : **41652950593**
Option 4 ID : **41652950592**
Status : **Answered**
Chosen Option : **4**

Q.23 The domain of the definition of the function

$f(x) = \frac{1}{4-x^2} + \log_{10}(x^3 - x)$ is :

Options

1. $(-1, 0) \cup (1, 2) \cup (2, \infty)$ ✓

2. $(1, 2) \cup (2, \infty)$

3. $(-2, -1) \cup (-1, 0) \cup (2, \infty)$

4. $(-1, 0) \cup (1, 2) \cup (3, \infty)$

Question Type : **MCQ**
Question ID : **41652912936**
Option 1 ID : **41652950524**
Option 2 ID : **41652950523**
Option 3 ID : **41652950525**
Option 4 ID : **41652950522**
Status : **Answered**
Chosen Option : **1**

Q.24 If the sum and product of the first three terms in an A.P. are 33 and 1155, respectively, then a value of its 11^{th} term is :

Options

1. -25 ✓

2. -35

3. 25

4. -36

Question Type : **MCQ**
Question ID : **41652912943**
Option 1 ID : **41652950551**
Option 2 ID : **41652950553**
Option 3 ID : **41652950552**
Option 4 ID : **41652950550**

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

Q.25 The mean and the median of the following ten numbers in increasing order

$10, 22, 26, 29, 34, x, 42, 67, 70, y$

are 42 and 35 respectively, then $\frac{y}{x}$ is equal to :

Options
1. $9/4$
2. $7/3$ ✓
3. $7/2$
4. $8/3$

Question Type : **MCQ**
Question ID : **41652912961**
Option 1 ID : **41652950625**
Option 2 ID : **41652950624**
Option 3 ID : **41652950622**
Option 4 ID : **41652950623**
Status : **Answered**
Chosen Option : **2**

Q.26 If $f : \mathbf{R} \to \mathbf{R}$ is a differentiable function and $f(2) = 6$, then $\lim\limits_{x \to 2} \int\limits_{6}^{f(x)} \frac{2t\,dt}{(x-2)}$ is :

Options
1. 0
2. $2f'(2)$
3. $24f'(2)$
4. $12f'(2)$ ✓

Question Type : **MCQ**
Question ID : **41652912945**
Option 1 ID : **41652950558**
Option 2 ID : **41652950559**
Option 3 ID : **41652950561**
Option 4 ID : **41652950560**
Status : **Answered**
Chosen Option : **4**

Q.27 If the tangent to the parabola $y^2 = x$ at a point (α, β), $(\beta > 0)$ is also a tangent to the ellipse, $x^2 + 2y^2 = 1$, then α is equal to :

Options
1. $\sqrt{2} - 1$
2. $2\sqrt{2} + 1$

3. $\sqrt{2}+1$ ✓

4. $2\sqrt{2}-1$

Question Type : **MCQ**
Question ID : **41652912957**
Option 1 ID : **41652950607**
Option 2 ID : **41652950609**
Option 3 ID : **41652950606**
Option 4 ID : **41652950608**
Status : **Not Answered**
Chosen Option : **--**

Q.28 If some three consecutive coefficients in the binomial expansion of $(x+1)^n$ in powers of x are in the ratio $2:15:70$, then the average of these three coefficients is :

Options

1. 227

2. 964

3. 625

4. 232 ✓

Question Type : **MCQ**
Question ID : **41652912942**
Option 1 ID : **41652950546**
Option 2 ID : **41652950549**
Option 3 ID : **41652950548**
Option 4 ID : **41652950547**
Status : **Not Answered**
Chosen Option : **--**

Q.29 Let P be the plane, which contains the line of intersection of the planes, $x+y+z-6=0$ and $2x+3y+z+5=0$ and it is perpendicular to the xy-plane. Then the distance of the point (0, 0, 256) from P is equal to :

Options

1. $205\sqrt{5}$

2. $17/\sqrt{5}$

3. $11/\sqrt{5}$ ✓

4. $63\sqrt{5}$

Question Type : **MCQ**
Question ID : **41652912958**
Option 1 ID : **41652950612**
Option 2 ID : **41652950613**
Option 3 ID : **41652950611**
Option 4 ID : **41652950610**

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

Q.30 Two poles standing on a horizontal ground are of heights 5 m and 10 m respectively. The line joining their tops makes an angle of 15° with the ground. Then the distance (in m) between the poles, is :

Options

1. $10(\sqrt{3}-1)$
2. $\frac{5}{2}(2+\sqrt{3})$
3. $5(2+\sqrt{3})$ ✓
4. $5(\sqrt{3}+1)$

Question Type : **MCQ**
Question ID : **41652912964**
Option 1 ID : **41652950635**
Option 2 ID : **41652950634**
Option 3 ID : **41652950636**
Option 4 ID : **41652950637**
Status : **Marked For Review**
Chosen Option : **3**