

JEE MAIN 2019 Question Paper and Answer Key – Paper 1 (Jan 12, Shift 1)

Section : Physics

Q.1
Options An ideal gas occupies a volume of 2 m^3 at a pressure of $3 \times 10^6 \text{ Pa}$. The energy of the gas is :

1. $9 \times 10^6 \text{ J}$
2. $6 \times 10^4 \text{ J}$
3. 10^8 J
4. $3 \times 10^2 \text{ J}$

Question ID : 4165299696

Option 1 ID : 41652938244

Option 2 ID : 41652938245

Option 3 ID : 41652938242

Option 4 ID : 41652938243

Status : Not Answered

Chosen Option : --

Q.2

Options The wave is propagating along the negative x -axis with speed 25 ms^{-1} .

1.

2. The wave is propagating along the positive x -axis with speed 100 ms^{-1} .

2.

3. The wave is propagating along the positive x -axis with speed 25 ms^{-1} .

3.

4. The wave is propagating along the negative x -axis with speed 100 ms^{-1} .

4.

Question ID : 4165299698

Option 1 ID : 41652938251

Option 2 ID : 41652938252

Option 3 ID : 41652938250

Option 4 ID : 41652938253

Status : Answered

Chosen Option : 3

Q.3

- An ideal battery of 4 V and resistance R are connected in series in the primary circuit of a potentiometer of length 1 m and resistance 5 Ω . The value of R, to give a potential difference of 5 mV across 10 cm of potentiometer wire, is :
- Options
1. 490 Ω
 2. 480 Ω
 3. 395 Ω
 4. 495 Ω

Question ID : 4165299702

Option 1 ID : 41652938267

Option 2 ID : 41652938266

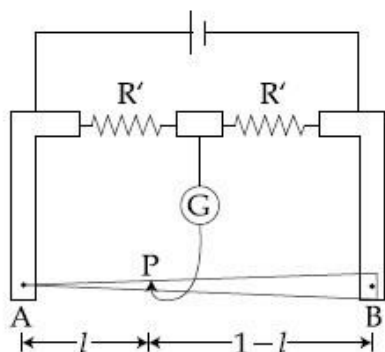
Option 3 ID : 41652938269

Option 4 ID : 41652938268

Status : Answered

Chosen Option : 3

- Q.4 In a meter bridge, the wire of length 1 m has a non-uniform cross-section such that, the variation $\frac{dR}{dl}$ of its resistance R with length l is $\frac{dR}{dl} \propto \frac{1}{\sqrt{l}}$. Two equal resistances are connected as shown in the figure. The galvanometer has zero deflection when the jockey is at point P. What is the length AP?



- Options
1. 0.2 m
 2. 0.3 m
 3. 0.25 m
 4. 0.35 m

Question ID : 4165299715

Option 1 ID : 41652938318

Option 2 ID : 41652938320

Option 3 ID : 41652938319

Option 4 ID : 41652938321

Status : Marked For Review

Chosen Option : 2

Q.5

A passenger train of length 60 m travels at a speed of 80 km/hr. Another freight train of length 120 m travels at a speed of

Options

1. $\frac{11}{5}$ n/hr. The ratio of times taken by the passenger train to completely cross the freight train when : (i) they are moving in same direction, and (ii) in the opposite directions is :

2. $\frac{5}{2}$
3. $\frac{3}{2}$
4. $\frac{25}{11}$

Question ID : 4165299688

Option 1 ID : 41652938211

Option 2 ID : 41652938212

Option 3 ID : 41652938213

Option 4 ID : 41652938210

Status : Not Answered

Chosen Option : --

Q.6 Two electric bulbs, rated at (25 W, 220 V) and (100 W, 220 V), are connected in series across a 220 V voltage source. If the 25 W and 100 W bulbs draw powers P_1 and P_2 respectively, then :

Options

1. $P_1 = 16$ W, $P_2 = 4$ W
2. $P_1 = 16$ W, $P_2 = 9$ W
3. $P_1 = 9$ W, $P_2 = 16$ W
4. $P_1 = 4$ W, $P_2 = 16$ W

Question ID : 4165299703

Option 1 ID : 41652938272

Option 2 ID : 41652938271

Option 3 ID : 41652938270

Option 4 ID : 41652938273

Status : Answered

Chosen Option : 3

Q.7 A straight rod of length L extends from $x = a$ to $x = L + a$. The gravitational force it exerts on a point mass ' m ' at $x = 0$, if the mass per unit length of the rod is $A + Bx^2$, is given by :

Options

1. $Gm \left[A \left(\frac{1}{a+L} - \frac{1}{a} \right) - BL \right]$
2. $Gm \left[A \left(\frac{1}{a} - \frac{1}{a+L} \right) - BL \right]$
3. $Gm \left[A \left(\frac{1}{a+L} - \frac{1}{a} \right) + BL \right]$

4. $Gm \left[A \left(\frac{1}{a} - \frac{1}{a+L} \right) + BL \right]$

Question ID : 4165299693

Option 1 ID : 41652938232

Option 2 ID : 41652938233

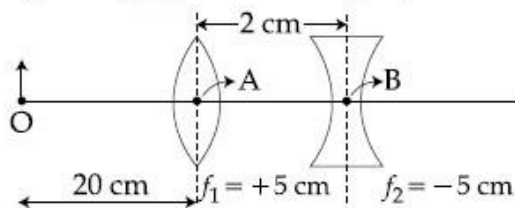
Option 3 ID : 41652938230

Option 4 ID : 41652938231

Status : Not Answered

Chosen Option : --

Q.8 What is the position and nature of image formed by lens combination shown in figure ? (f_1, f_2 are focal lengths)



- Options
1. 70 cm from point B at left; virtual
 2. 40 cm from point B at right; real
 3. $\frac{20}{3}$ cm from point B at right, real
 4. 70 cm from point B at right; real

Question ID : 4165299708

Option 1 ID : 41652938291

Option 2 ID : 41652938290

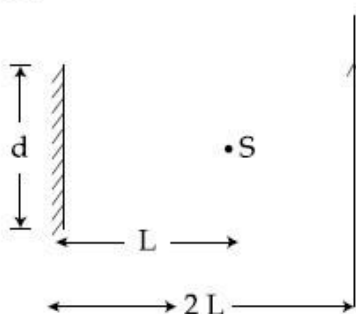
Option 3 ID : 41652938293

Option 4 ID : 41652938292

Status : Not Answered

Chosen Option : --

Q.9 A point source of light, S is placed at a distance L in front of the centre of plane mirror of width d which is hanging vertically on a wall. A man walks in front of the mirror along a line parallel to the mirror, at a distance 2L as shown below. The distance over which the man can see the image of the light source in the mirror is :



- Options
1. d
 2. 2d

3. $3d$

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

Question ID : 4165299709

Option 1 ID : 41652938297

Option 2 ID : 41652938296

Option 3 ID : 41652938295

Option 4 ID : 41652938294

Status : Not Answered

Chosen Option : --

Q.10 A light wave is incident normally on a glass slab of refractive index 1.5. If 4% of light gets reflected and the amplitude of the electric field of the incident light is 30 V/m, then the amplitude of the electric field for the wave propagating in the glass medium will be :

- Options
1. 30 V/m
 2. 10 V/m
 3. 24 V/m
 4. 6 V/m

Question ID : 4165299707

Option 1 ID : 41652938289

Option 2 ID : 41652938286

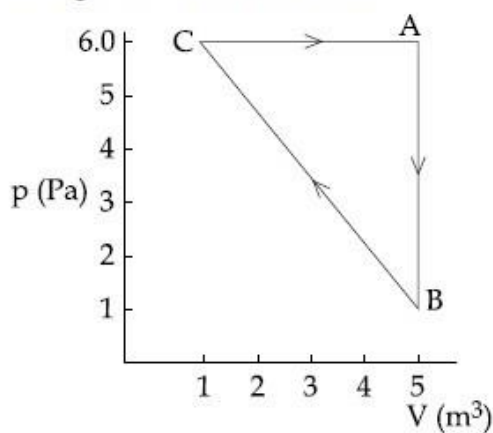
Option 3 ID : 41652938287

Option 4 ID : 41652938288

Status : Not Answered

Chosen Option : --

Q.11 For the given cyclic process CAB as shown for a gas, the work done is :



- Options
1. 30 J
 2. 10 J
 3. 1 J
 4. 5 J

Question ID : 4165299695

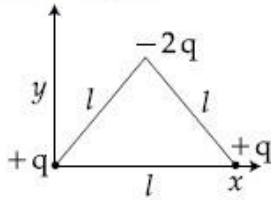
Option 1 ID : 41652938238

Option 2 ID : 41652938239

Option 3 ID : 41652938241

Q.12

Determine the electric dipole moment of the system of three charges, placed on the vertices of an equilateral triangle, as shown in the figure :



Options

1. $\sqrt{3} ql \frac{\hat{j} - \hat{i}}{\sqrt{2}}$

2. $(ql) \frac{\hat{i} + \hat{j}}{\sqrt{2}}$

3. $2ql \hat{j}$

4. $-\sqrt{3} ql \hat{j}$

Question ID : 4165299700

Option 1 ID : 41652938261

Option 2 ID : 41652938258

Option 3 ID : 41652938260

Option 4 ID : 41652938259

Status : Not Answered

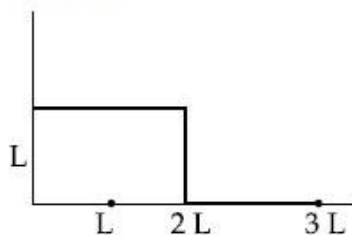
Chosen Option : --

Q.13

The position vector of the centre of mass

$\vec{r}_{cm}$

of an asymmetric uniform bar of negligible area of cross-section as shown in figure is :



Options

1. $\vec{r}_{cm} = \frac{13}{8} L \hat{x} + \frac{5}{8} L \hat{y}$

2. $\vec{r}_{cm} = \frac{5}{8} L \hat{x} + \frac{13}{8} L \hat{y}$

3. $\vec{r}_{cm} = \frac{3}{8} L \hat{x} + \frac{11}{8} L \hat{y}$

4. $\vec{r}_{cm} = \frac{11}{8} L \hat{x} + \frac{3}{8} L \hat{y}$

Question ID : 4165299691

Option 1 ID : 41652938222

Option 2 ID : 41652938223

Option 3 ID : 41652938225

Option 4 ID : 41652938224

Status : **Not Answered**

Chosen Option : --

Q.14 A person standing on an open ground hears the sound of a jet aeroplane, coming from north at an angle 60° with ground level. But he finds the aeroplane right vertically above his position. If v is the speed of sound, speed of the plane is :

Options

1. $\frac{\sqrt{3}}{2}v$

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

3. v

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

Question ID : 4165299687

Option 1 ID : 41652938208

Option 2 ID : 41652938209

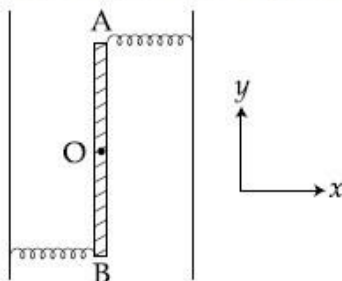
Option 3 ID : 41652938206

Option 4 ID : 41652938207

Status : **Answered**

Chosen Option : 2

Q.15 Two light identical springs of spring constant k are attached horizontally at the two ends of a uniform horizontal rod AB of length l and mass m . The rod is pivoted at its centre 'O' and can rotate freely in horizontal plane. The other ends of the two springs are fixed to rigid supports as shown in figure. The rod is gently pushed through a small angle and released. The frequency of resulting oscillation is :



Options

1. $\frac{1}{2\pi} \sqrt{\frac{3k}{m}}$

2. $\frac{1}{2\pi} \sqrt{\frac{2k}{m}}$

3. $\frac{1}{2\pi} \sqrt{\frac{6k}{m}}$

4. $\frac{1}{2\pi} \sqrt{\frac{k}{m}}$

Question ID : 4165299697

Option 1 ID : 41652938248

Option 2 ID : 41652938246

Option 3 ID : 41652938249

Option 4 ID : 41652938247

Status : Answered

Chosen Option : 2

Q.16 A simple pendulum, made of a string of length l and a bob of mass m , is released from a small angle θ_0 . It strikes a block of mass M , kept on a horizontal surface at its lowest point of oscillations, elastically. It bounces back and goes up to an angle θ_1 . Then M is given by :

Options

1. $\frac{m}{2} \left(\frac{\theta_0 + \theta_1}{\theta_0 - \theta_1} \right)$

2. $m \left(\frac{\theta_0 - \theta_1}{\theta_0 + \theta_1} \right)$

3. $m \left(\frac{\theta_0 + \theta_1}{\theta_0 - \theta_1} \right)$

4. $\frac{m}{2} \left(\frac{\theta_0 - \theta_1}{\theta_0 + \theta_1} \right)$

Question ID : 4165299689

Option 1 ID : 41652938215

Option 2 ID : 41652938217

Option 3 ID : 41652938216

Option 4 ID : 41652938214

Status : Not Answered

Chosen Option : --

Q.17 A 100 V carrier wave is made to vary between 160 V and 40 V by a modulating signal. What is the modulation index ?

Options

1. 0.3

2. 0.5

3. 0.6

4. 0.4

Question ID : 4165299713

Option 1 ID : 41652938310

Option 2 ID : 41652938312

Option 3 ID : 41652938311

Option 4 ID : 41652938313

Status : Not Answered

- Q.18 A cylinder of radius R is surrounded by a cylindrical shell of inner radius R and outer radius $2R$. The thermal conductivity of the material of the inner cylinder is K_1 and that of the outer cylinder is K_2 . Assuming no loss of heat, the effective thermal conductivity of the system for heat flowing along the length of the cylinder is :

- Options
1. $\frac{K_1 + K_2}{2}$
 2. $K_1 + K_2$
 3. $\frac{2K_1 + 3K_2}{5}$
 4. $\frac{K_1 + 3K_2}{4}$

Question ID : 4165299694

Option 1 ID : 41652938235

Option 2 ID : 41652938234

Option 3 ID : 41652938237

Option 4 ID : 41652938236

Status : Not Answered

Chosen Option :--

- Q.19 The least count of the main scale of a screw gauge is 1 mm . The minimum number of divisions on its circular scale required to measure $5 \mu\text{m}$ diameter of a wire is :

- Options
1. 50
 2. 200
 3. 100
 4. 500

Question ID : 4165299686

Option 1 ID : 41652938202

Option 2 ID : 41652938204

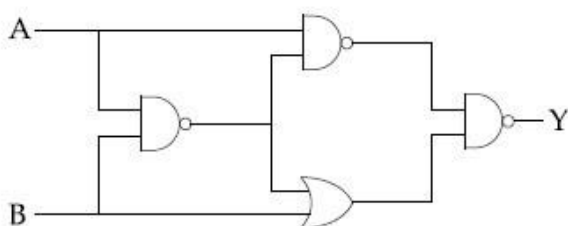
Option 3 ID : 41652938203

Option 4 ID : 41652938205

Status : Answered

Chosen Option : 3

- Q.20 The output of the given logic circuit is :



- Options
1. $A\bar{B} + \bar{A}B$

2. $\overrightarrow{AB} + \overrightarrow{AB}$

3. $\overrightarrow{AB}$

4. $\overrightarrow{AB}$

Question ID : 4165299712

Option 1 ID : 41652938306

Option 2 ID : 41652938309

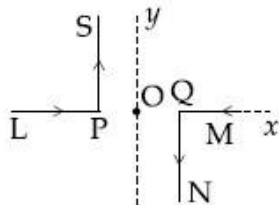
Option 3 ID : 41652938307

Option 4 ID : 41652938308

Status : Not Answered

Chosen Option : --

- Q.21 As shown in the figure, two infinitely long, identical wires are bent by 90° and placed in such a way that the segments LP and QM are along the x-axis, while segments PS and QN are parallel to the y-axis. If $OP = OQ = 4$ cm, and the magnitude of the magnetic field at O is 10^{-4} T, and the two wires carry equal currents (see figure), the magnitude of the current in each wire and the direction of the magnetic field at O will be ($\mu_0 = 4\pi \times 10^{-7} \text{ NA}^{-2}$):



- Options
1. 20 A, perpendicular out of the page
 2. 40 A, perpendicular out of the page
 3. 20 A, perpendicular into the page
 4. 40 A, perpendicular into the page

Question ID : 4165299704

Option 1 ID : 41652938275

Option 2 ID : 41652938277

Option 3 ID : 41652938274

Option 4 ID : 41652938276

Status : Not Answered

Chosen Option : --

- Q.22 A particle of mass m moves in a circular orbit in a central potential field $U(r) = \frac{1}{2} kr^2$. If Bohr's quantization conditions are applied, radii of possible orbits and energy levels vary with quantum number n as :

- Options
1. $r_n \propto \sqrt{n}$, $E_n \propto n$
 2. $r_n \propto \sqrt{n}$, $E_n \propto \frac{1}{n}$
 3. $r_n \propto n$, $E_n \propto n$

4. $r_n \propto n^2$, $E_n \propto \frac{1}{n^2}$

Question ID : 4165299711

Option 1 ID : 41652938305

Option 2 ID : 41652938304

Option 3 ID : 41652938303

Option 4 ID : 41652938302

Status : Answered

Chosen Option : 2

Q.23 A proton and an α -particle (with their masses in the ratio of 1 : 4 and charges in the ratio of 1 : 2) are accelerated from rest through a potential difference V. If a uniform magnetic field (B) is set up perpendicular to their velocities, the ratio of the radii $r_p : r_\alpha$ of the circular paths described by them will be :

- Options
1. $1 : \sqrt{2}$
 2. $1 : 2$
 3. $1 : 3$
 4. $1 : \sqrt{3}$

Question ID : 4165299705

Option 1 ID : 41652938279

Option 2 ID : 41652938278

Option 3 ID : 41652938280

Option 4 ID : 41652938281

Status : Not Answered

Chosen Option : --

Q.24 Let the moment of inertia of a hollow cylinder of length 30 cm (inner radius 10 cm and outer radius 20 cm), about its axis be I. The radius of a thin cylinder of the same mass such that its moment of inertia about its axis is also I, is :

- Options
1. 12 cm
 2. 16 cm
 3. 14 cm
 4. 18 cm

Question ID : 4165299692

Option 1 ID : 41652938227

Option 2 ID : 41652938229

Option 3 ID : 41652938226

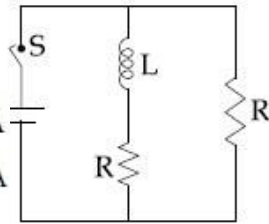
Option 4 ID : 41652938228

Status : Not Answered

Chosen Option : --

Q.25

In the figure shown, a circuit contains two identical resistors with resistance $R = 5 \, \Omega$ and an inductance with $L = 2 \, \text{mH}$. An ideal battery of $15 \, \text{V}$ is connected in the circuit. What will be the current through the battery long after the switch is closed ?



- Options
1. $5.5 \, \text{A}$
 2. $7.5 \, \text{A}$
 3. $3 \, \text{A}$
 4. $6 \, \text{A}$

Question ID : 4165299706

Option 1 ID : 41652938282

Option 2 ID : 41652938283

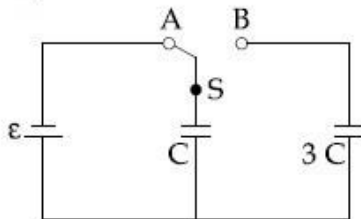
Option 3 ID : 41652938285

Option 4 ID : 41652938284

Status : Not Answered

Chosen Option : --

Q.26 In the figure shown, after the switch 'S' is turned from position 'A' to position 'B', the energy dissipated in the circuit in terms of capacitance 'C' and total charge 'Q' is :



- Options
1. $\frac{1}{8} \frac{Q^2}{C}$
 2. $\frac{3}{8} \frac{Q^2}{C}$
 3. $\frac{5}{8} \frac{Q^2}{C}$
 4. $\frac{3}{4} \frac{Q^2}{C}$

Question ID : 4165299699

Option 1 ID : 41652938255

Option 2 ID : 41652938257

Option 3 ID : 41652938256

Option 4 ID : 41652938254

Status : Not Answered

Chosen Option : --

Q.27

A satellite of mass M is in a circular orbit of radius R about the centre of the earth. A meteorite of the same mass, falling towards the earth, collides with the satellite such that it escapes to infinity. The subsequent motion of the satellite is

Options

1. in an elliptical orbit
2. in a parabolic orbit
3. in the same circular orbit of radius R
4. in a circular orbit of a different radius

Question ID : 4165299690

Option 1 ID : 41652938221

Option 2 ID : 41652938220

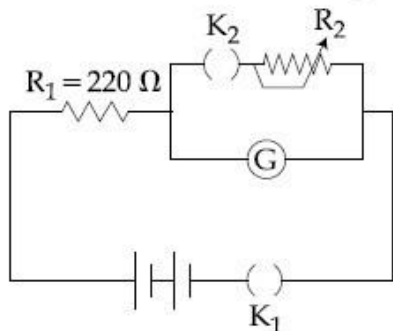
Option 3 ID : 41652938218

Option 4 ID : 41652938219

Status : Not Answered

Chosen Option :--

Q.28 The galvanometer deflection, when key K_1 is closed but K_2 is open, equals θ_0 (see figure). On closing K_2 also and adjusting R_2 to $5\ \Omega$, the deflection in galvanometer becomes $\frac{\theta_0}{5}$. The resistance of the galvanometer is, then, given by [Neglect the internal resistance of battery] :



Options

1. $5\ \Omega$
2. $22\ \Omega$
3. $25\ \Omega$
4. $12\ \Omega$

Question ID : 4165299714

Option 1 ID : 41652938316

Option 2 ID : 41652938314

Option 3 ID : 41652938317

Option 4 ID : 41652938315

Status : Not Answered

Chosen Option :--

Q.29

- Options
1. 10.00
 2. 0.07
 3. $14.14e$
 4. 4.47
- wavelengths $\frac{\lambda_A}{\lambda_B}$ is close to :

Question ID : 4165299710

Option 1 ID : 41652938299

Option 2 ID : 41652938300

Option 3 ID : 41652938301

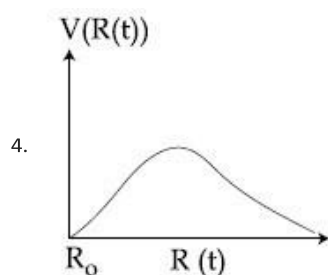
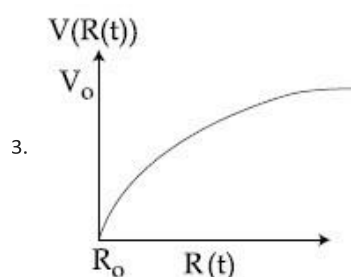
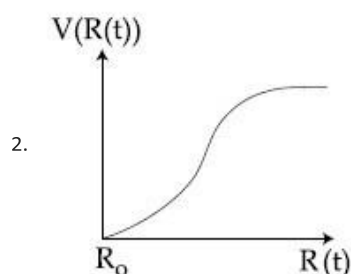
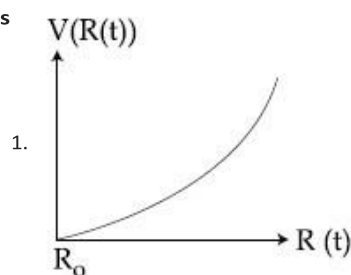
Option 4 ID : 41652938298

Status : Not Answered

Chosen Option : --

- Q.30 There is a uniform spherically symmetric surface charge density at a distance R_0 from the origin. The charge distribution is initially at rest and starts expanding because of mutual repulsion. The figure that represents best the speed $V(R(t))$ of the distribution as a function of its instantaneous radius $R(t)$ is :

Options



Question ID : 4165299701

Option 1 ID : 41652938262

Option 2 ID : 41652938265

Option 3 ID : 41652938264

Option 4 ID : 41652938263

Status : **Not Answered**

Chosen Option : --

Section: Chemistry

Q.1 In the Hall-Heroult process, aluminium is formed at the cathode. The cathode is made out of :

- Options
1. Pure aluminium
 2. Carbon
 3. Copper
 4. Platinum

Question ID : 4165299727

Option 1 ID : 41652938367

Option 2 ID : 41652938369

Option 3 ID : 41652938368

Option 4 ID : 41652938366

Status : **Answered**

Chosen Option : 3

Q.2 The correct order for acid strength of compounds

$\text{CH} \equiv \text{CH}$, $\text{CH}_3 - \text{C} \equiv \text{CH}$ and $\text{CH}_2 = \text{CH}_2$ is as follows :

- Options
1. $\text{CH} \equiv \text{CH} > \text{CH}_2 = \text{CH}_2 > \text{CH}_3 - \text{C} \equiv \text{CH}$
 2. $\text{CH}_3 - \text{C} \equiv \text{CH} > \text{CH} \equiv \text{CH} > \text{CH}_2 = \text{CH}_2$
 3. $\text{CH}_3 - \text{C} \equiv \text{CH} > \text{CH}_2 = \text{CH}_2 > \text{HC} \equiv \text{CH}$
 4. $\text{HC} \equiv \text{CH} > \text{CH}_3 - \text{C} \equiv \text{CH} > \text{CH}_2 = \text{CH}_2$

Question ID : 4165299724

Option 1 ID : 41652938357

Option 2 ID : 41652938355

Option 3 ID : 41652938356

Option 4 ID : 41652938354

Status : **Answered**

Chosen Option : 1

Q.3 In a chemical reaction, $\text{A} + 2\text{B} \xrightleftharpoons{\text{K}} 2\text{C} + \text{D}$, the initial concentration of B was 1.5 times of the concentration of A, but the equilibrium concentrations of A and B were found to be equal. The equilibrium constant(K) for the aforesaid chemical reaction is :

- Options
1. 4
 2. 16
 3. $\frac{1}{4}$

Question ID : 4165299742

Option 1 ID : 41652938427

Option 2 ID : 41652938429

Option 3 ID : 41652938426

Option 4 ID : 41652938428

Status : Not Answered

Chosen Option :--

Q.4 Given

Gas	H ₂	CH ₄	CO ₂	SO ₂
Critical Temperature/K	33	190	304	630

On the basis of data given above, predict which of the following gases shows least adsorption on a definite amount of charcoal ?

- Options
1. SO₂
 2. CH₄
 3. CO₂
 4. H₂

Question ID : 4165299745

Option 1 ID : 41652938438

Option 2 ID : 41652938440

Option 3 ID : 41652938439

Option 4 ID : 41652938441

Status : Answered

Chosen Option : 2

Q.5 Mn₂(CO)₁₀ is an organometallic compound due to the presence of :

- Options
1. Mn – C bond
 2. Mn – Mn bond
 3. Mn – O bond
 4. C – O bond

Question ID : 4165299733

Option 1 ID : 41652938390

Option 2 ID : 41652938391

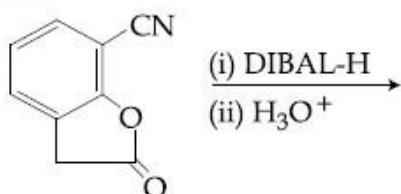
Option 3 ID : 41652938393

Option 4 ID : 41652938392

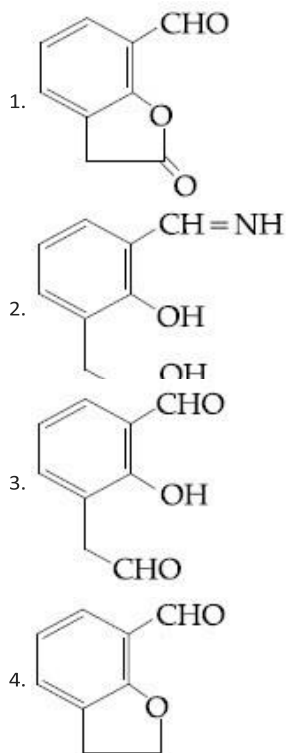
Status : Not Answered

Chosen Option :--

Q.6 The major product of the following reaction is :



Options



Question ID : 4165299721

Option 1 ID : 41652938342

Option 2 ID : 41652938344

Option 3 ID : 41652938343

Option 4 ID : 41652938345

Status : Answered

Chosen Option : 2

Q.7 A metal on combustion in excess air forms X. X upon hydrolysis with water yields H_2O_2 and O_2 along with another product. The metal is :

- Options
1. Na
 2. Rb
 3. Mg
 4. Li

Question ID : 4165299729

Option 1 ID : 41652938375

Option 2 ID : 41652938376

Option 3 ID : 41652938377

Option 4 ID : 41652938374

Status : Answered

Chosen Option : 3

Q.8 The molecule that has minimum/no role in the formation of photochemical smog, is :

- Options
1. N_2
 2. $\text{CH}_2=\text{O}$
 3. O_3
 4. NO

Question ID : 4165299735
Option 1 ID : 41652938399
Option 2 ID : 41652938401
Option 3 ID : 41652938398
Option 4 ID : 41652938400

Status : Answered

Chosen Option : 1

Q.9 The pair of metal ions that can give a spin-only magnetic moment of 3.9 BM for the complex $[M(H_2O)_6]Cl_2$ is :

- Options
1. V^{2+} and Co^{2+}
 2. V^{2+} and Fe^{2+}
 3. Co^{2+} and Fe^{2+}
 4. Cr^{2+} and Mn^{2+}

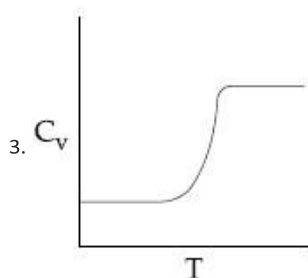
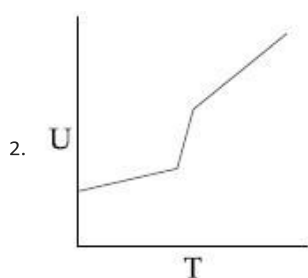
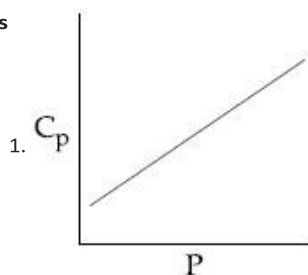
Question ID : 4165299731
Option 1 ID : 41652938384
Option 2 ID : 41652938383
Option 3 ID : 41652938385
Option 4 ID : 41652938382

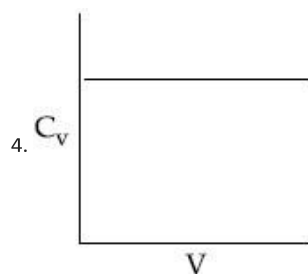
Status : Answered

Chosen Option : 2

Q.10 For a diatomic ideal gas in a closed system, which of the following plots does not correctly describe the relation between various thermodynamic quantities ?

Options





Question ID : 4165299740

Option 1 ID : 41652938420

Option 2 ID : 41652938418

Option 3 ID : 41652938419

Option 4 ID : 41652938421

Status : Marked For Review

Chosen Option : 3

Q.11 Among the following compounds most basic amino acid is :

Options 1. Asparagine

2. Lysine

3. Serine

4. Histidine

Question ID : 4165299723

Option 1 ID : 41652938353

Option 2 ID : 41652938352

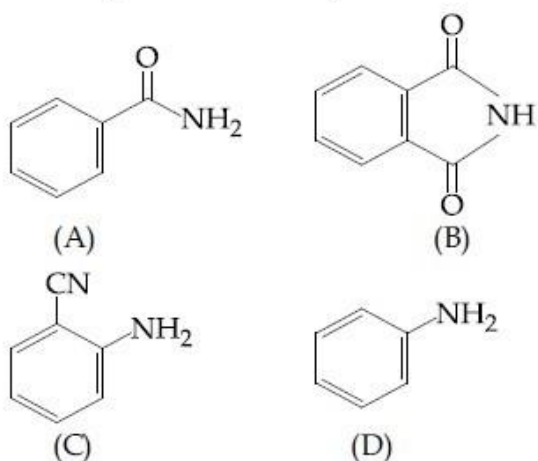
Option 3 ID : 41652938351

Option 4 ID : 41652938350

Status : Answered

Chosen Option : 4

Q.12 The increasing order of reactivity of the following compounds towards reaction with alkyl halides directly is :



Options 1. (B) < (A) < (C) < (D)

2. (A) < (B) < (C) < (D)

3. (B) < (A) < (D) < (C)

4. (A) < (C) < (D) < (B)

Question ID : 4165299718

Option 1 ID : 41652938333

Option 2 ID : 41652938331

Option 3 ID : 41652938330

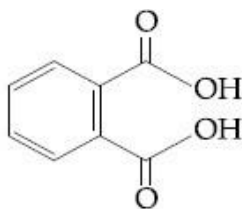
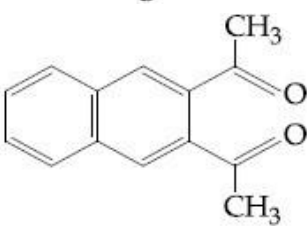
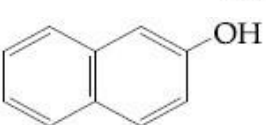
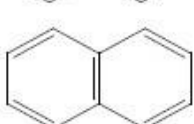
Option 4 ID : 41652938332

Status : **Answered**

Chosen Option : 3

Q.13 Among the following four aromatic compounds, which one will have the lowest melting point ?

Options

1. 
2. 
3. 
4. 

Question ID : 4165299725

Option 1 ID : 41652938360

Option 2 ID : 41652938361

Option 3 ID : 41652938359

Option 4 ID : 41652938358

Status : **Not Answered**

Chosen Option : --

Q.14 50 mL of 0.5 M oxalic acid is needed to neutralize 25 mL of sodium hydroxide solution. The amount of NaOH in 50 mL of the given sodium hydroxide solution is :

Options 1. 40 g

2. 10 g

3. 20 g

4. 80 g

Question ID : 4165299736

Option 1 ID : 41652938403

Option 2 ID : 41652938405

Option 3 ID : 41652938402

Option 4 ID : 41652938404

Status : **Answered**

Chosen Option : 3

Q.15

The volume of gas A is twice than that of gas B. The compressibility factor of gas A is $3P_A = 2P_B$ than that of gas B at same temperature. The pressures of the gases for

2. $2P_A = 3P_B$ or of moles are :

3. $P_A = 3P_B$

4. $P_A = 2P_B$

Question ID : 4165299737

Option 1 ID : 41652938409

Option 2 ID : 41652938408

Option 3 ID : 41652938407

Option 4 ID : 41652938406

Status : Answered

Chosen Option : 2

Q.16 The hardness of a water sample (in terms of equivalents of CaCO_3) containing 10^{-3} M CaSO_4 is :

(molar mass of $\text{CaSO}_4 = 136 \text{ g mol}^{-1}$)

Options 1. 10 ppm

2. 50 ppm

3. 90 ppm

4. 100 ppm

Question ID : 4165299728

Option 1 ID : 41652938372

Option 2 ID : 41652938373

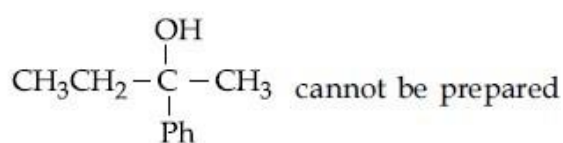
Option 3 ID : 41652938370

Option 4 ID : 41652938371

Status : Answered

Chosen Option : 3

Q.17



by :

Options 1. $\text{CH}_3\text{CH}_2\text{COCH}_3 + \text{PhMgX}$

2. $\text{PhCOCH}_2\text{CH}_3 + \text{CH}_3\text{MgX}$

3. $\text{PhCOCH}_3 + \text{CH}_3\text{CH}_2\text{MgX}$

4. $\text{HCHO} + \text{PhCH}(\text{CH}_3)\text{CH}_2\text{MgX}$

Question ID : 4165299719

Option 1 ID : 41652938335

Option 2 ID : 41652938336

Option 3 ID : 41652938334

Option 4 ID : 41652938337

Status : Not Answered

Chosen Option : --

Q.18

Freezing point of a 4% aqueous solution of X is equal to freezing point of 12% aqueous

- Options
1. 3A
 2. 2A
 3. A
 4. 4A

Question ID : 4165299741
Option 1 ID : 41652938424
Option 2 ID : 41652938423
Option 3 ID : 41652938422
Option 4 ID : 41652938425

Status : Answered

Chosen Option : 2

Q.19 The metal d-orbitals that are directly facing the ligands in $K_3[Co(CN)_6]$ are :

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

Question ID : 4165299732
Option 1 ID : 41652938386
Option 2 ID : 41652938389
Option 3 ID : 41652938388
Option 4 ID : 41652938387

Status : Answered

Chosen Option : 2

Q.20 Decomposition of X exhibits a rate constant of $0.05 \mu\text{g}/\text{year}$. How many years are required for the decomposition of $5 \mu\text{g}$ of X into $2.5 \mu\text{g}$?

- Options
1. 50
 2. 25
 3. 20
 4. 40

Question ID : 4165299744
Option 1 ID : 41652938435
Option 2 ID : 41652938436
Option 3 ID : 41652938434
Option 4 ID : 41652938437

Status : Answered

Chosen Option : 2

Q.21

The standard electrode potential $E^\ominus$ and its temperature coefficient $\left(\frac{dE^\ominus}{dT}\right)$ for a cell are 2 V and $-5 \times 10^{-4} \text{ VK}^{-1}$ at 300 K respectively. The cell reaction is

- Options
1. $-412.8 \text{ Cu}^{2+}(\text{aq}) \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu}(\text{s})$
 2. $-384.0 \text{ ndard reaction enthalpy } (\Delta_r H^\ominus) \text{ at } 298 \text{ K in kJ mol}^{-1} \text{ is,}$
 3. 192.0
 4. 206.4
- $R = 8 \text{ JK}^{-1} \text{ mol}^{-1}$ and $F = 96,000 \text{ Cmol}^{-1}$

Question ID : 4165299743

Option 1 ID : 41652938430

Option 2 ID : 41652938432

Option 3 ID : 41652938433

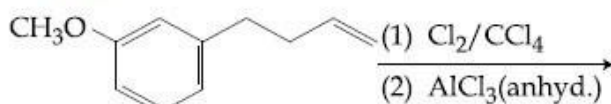
Option 4 ID : 41652938431

Status : Not Answered

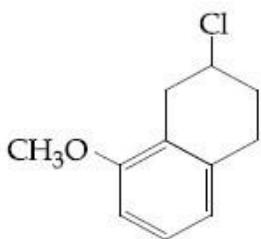
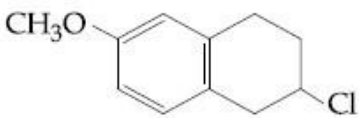
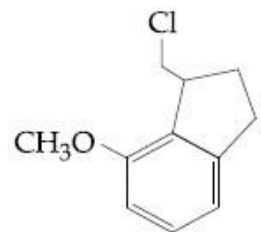
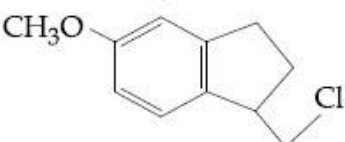
Chosen Option : --

Q.22

The major product of the following reaction is :



Options

1. 
2. 
3. 
4. 

Question ID : 4165299722

Option 1 ID : 41652938348

Option 2 ID : 41652938349

Option 3 ID : 41652938346

Option 4 ID : 41652938347

Status : Not Answered

Chosen Option : --

Q.23

The element with $Z=120$ (not yet discovered) will be an/a :

Options 1. inner-transition metal

2. alkaline earth metal
3. alkali metal
4. transition metal

Question ID : 4165299726

Option 1 ID : 41652938365

Option 2 ID : 41652938363

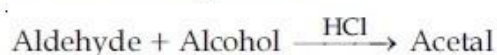
Option 3 ID : 41652938362

Option 4 ID : 41652938364

Status : Answered

Chosen Option : 2

Q.24 In the following reaction



Aldehyde Alcohol

HCHO ^tBuOH

CH₃CHO MeOH

The best combination is :

- Options
1. CH₃CHO and ^tBuOH
 2. HCHO and MeOH
 3. CH₃CHO and MeOH
 4. HCHO and ^tBuOH

Question ID : 4165299717

Option 1 ID : 41652938328

Option 2 ID : 41652938326

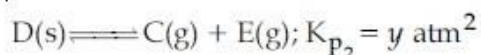
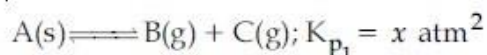
Option 3 ID : 41652938329

Option 4 ID : 41652938327

Status : Answered

Chosen Option : 2

Q.25 Two solids dissociate as follows



The total pressure when both the solids dissociate simultaneously is :

- Options
1. $\sqrt{x+y}$ atm
 2. $2(\sqrt{x+y})$ atm
 3. $(x+y)$ atm
 4. $x^2 + y^2$ atm

Question ID : 4165299739

Option 1 ID : 41652938414

Option 2 ID : 41652938416

Option 3 ID : 41652938415

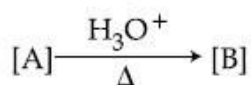
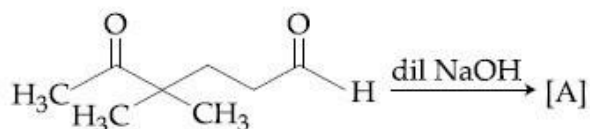
Option 4 ID : 41652938417

Status : Answered

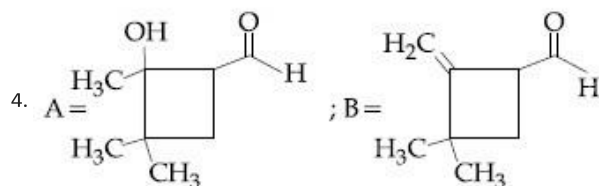
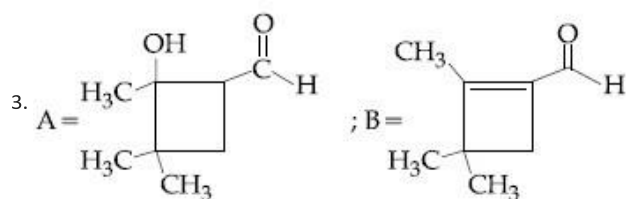
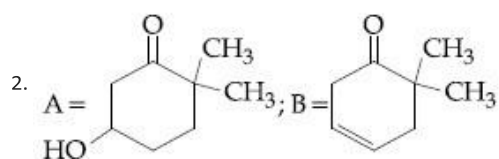
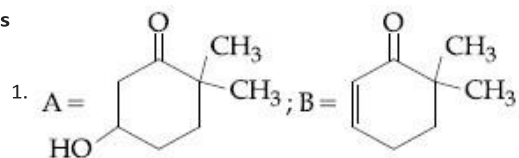
Chosen Option : 2

Q.26

In the following reactions, products A and B are :



Options



Question ID : 4165299720

Option 1 ID : 41652938338

Option 2 ID : 41652938339

Option 3 ID : 41652938340

Option 4 ID : 41652938341

Status : Answered

Chosen Option : 3

Q.27

What is the work function of the metal if the light of wavelength $4000\text{\AA}$ generates photoelectrons of velocity $6 \times 10^5 \text{ ms}^{-1}$ from it?

(Mass of electron = $9 \times 10^{-31} \text{ kg}$)

Velocity of light = $3 \times 10^8 \text{ ms}^{-1}$

Planck's constant = $6.626 \times 10^{-34} \text{ Js}$

Charge of electron = $1.6 \times 10^{-19} \text{ J eV}^{-1}$)

Options

1. 0.9 eV

2. 3.1 eV

3. 2.1 eV

4. 4.0 eV

Question ID : 4165299738

Option 1 ID : 41652938412

Option 2 ID : 41652938413
Option 3 ID : 41652938411
Option 4 ID : 41652938410
Status : Answered
Chosen Option : 2

Q.28 Iodine reacts with concentrated HNO_3 to yield Y along with other products. The oxidation state of iodine in Y, is :

- Options
1. 5
 2. 7
 3. 3
 4. 1

Question ID : 4165299730
Option 1 ID : 41652938380
Option 2 ID : 41652938381
Option 3 ID : 41652938379
Option 4 ID : 41652938378
Status : Answered
Chosen Option : 3

Q.29 Poly- β -hydroxybutyrate-co- β -hydroxyvalerate(PHBV) is a copolymer of _____.

- Options
1. 3-hydroxybutanoic acid and 4-hydroxypentanoic acid
 2. 2-hydroxybutanoic acid and 3-hydroxypentanoic acid
 3. 3-hydroxybutanoic acid and 2-hydroxypentanoic acid
 4. 3-hydroxybutanoic acid and 3-hydroxypentanoic acid

Question ID : 4165299716
Option 1 ID : 41652938325
Option 2 ID : 41652938322
Option 3 ID : 41652938324
Option 4 ID : 41652938323
Status : Answered
Chosen Option : 2

Q.30 Water samples with BOD values of 4 ppm and 18 ppm, respectively, are :

- Options
1. Clean and Clean
 2. Highly polluted and Clean
 3. Clean and Highly polluted
 4. Highly polluted and Highly polluted

Question ID : 4165299734
Option 1 ID : 41652938394
Option 2 ID : 41652938395
Option 3 ID : 41652938396
Option 4 ID : 41652938397

Section: Mathematics

- Q.1 An ordered pair (α, β) for which the system of linear equations
- $$(1 + \alpha)x + \beta y + z = 2$$
- $$\alpha x + (1 + \beta)y + z = 3$$
- $$\alpha x + \beta y + 2z = 2$$
- has a unique solution, is :

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

Question ID : **4165299750**
Option 1 ID : **41652938461**
Option 2 ID : **41652938459**
Option 3 ID : **41652938460**
Option 4 ID : **41652938458**

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

- Q.2 The product of three consecutive terms of a G.P. is 512. If 4 is added to each of the first and the second of these terms, the three terms now form an A.P. Then the sum of the original three terms of the given G.P. is :

- Options
1. 36
 2. 32
 3. 24
 4. 28

Question ID : **4165299753**
Option 1 ID : **41652938470**
Option 2 ID : **41652938471**
Option 3 ID : **41652938473**
Option 4 ID : **41652938472**

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

- Q.3 The Boolean expression $((p \wedge q) \vee (p \vee \sim q)) \wedge (\sim p \wedge \sim q)$ is equivalent to :

- Options
1. $p \wedge q$
 2. $p \wedge (\sim q)$
 3. $(\sim p) \wedge (\sim q)$
 4. $p \vee (\sim q)$

Question ID : **4165299775**

Option 1 ID : 41652938561

Option 2 ID : 41652938558

Option 3 ID : 41652938560

Option 4 ID : 41652938559

Status : **Not Answered**

Chosen Option : --

Q.4 Consider three boxes, each containing 10 balls labelled 1, 2, ..., 10. Suppose one ball is randomly drawn from each of the boxes. Denote by n_i , the label of the ball drawn from the i^{th} box, ($i=1, 2, 3$). Then, the number of ways in which the balls can be chosen such that $n_1 < n_2 < n_3$ is :

Options1. 120

2. 82

3. 240

4. 164

Question ID : 4165299751

Option 1 ID : 41652938462

Option 2 ID : 41652938464

Option 3 ID : 41652938465

Option 4 ID : 41652938463

Status : **Not Answered**

Chosen Option : --

Q.5 A tetrahedron has vertices $P(1, 2, 1)$, $Q(2, 1, 3)$, $R(-1, 1, 2)$ and $O(0, 0, 0)$. The angle between the faces OPQ and PQR is :

Options

1. $\cos^{-1}\left(\frac{17}{31}\right)$

2. $\cos^{-1}\left(\frac{19}{35}\right)$

3. $\cos^{-1}\left(\frac{9}{35}\right)$

4. $\cos^{-1}\left(\frac{7}{31}\right)$

Question ID : 4165299769

Option 1 ID : 41652938535

Option 2 ID : 41652938534

Option 3 ID : 41652938536

Option 4 ID : 41652938537

Status : **Not Answered**

Chosen Option : --

Q.6 The maximum area (in sq. units) of a rectangle having its base on the x -axis and its other two vertices on the parabola, $y = 12 - x^2$ such that the rectangle lies inside the parabola, is :

Options1. 36

$$20\sqrt{2}$$

$$32$$

$$18\sqrt{3}$$

2.

3.

4.

Question ID : 4165299758

Option 1 ID : 41652938490

Option 2 ID : 41652938492

Option 3 ID : 41652938491

Option 4 ID : 41652938493

Status : **Not Answered**

Chosen Option : --

Q.7
Options

If the straight line, $2x - 3y + 17 = 0$ is perpendicular to the line passing through the points $(7, 17)$ and $(15, \beta)$, then β equals :

$$\frac{35}{3}$$

1.

$$3$$

2.

$$-5$$

3.

$$-\frac{35}{3}$$

4.

$$5$$

Question ID : 4165299763

Option 1 ID : 41652938511

Option 2 ID : 41652938510

Option 3 ID : 41652938513

Option 4 ID : 41652938512

Status : **Answered**

Chosen Option : 1

The sum of the distinct real values of μ , for

which the vectors, $\mu \hat{i} + \hat{j} + \hat{k}$,

$\hat{i} + \mu \hat{j} + \hat{k}$, $\hat{i} + \hat{j} + \mu \hat{k}$ are

co-planar, is :

Q.8

Options 1.

$$-1$$

2.

$$0$$

3.

$$1$$

4.

$$2$$

Question ID : 4165299770

Option 1 ID : 41652938539

Option 2 ID : 41652938538

Option 3 ID : 41652938540

Option 4 ID : 41652938541

Status : **Not Answered**

Chosen Option : --

Options Let P(4, -4) and Q(9, 6) be two points on the parabola, $y^2 = 4x$ and let X be any point on the arc POQ of this parabola, where O is the vertex of this parabola, such that the area of ΔPXQ is maximum. Then this maximum area (in sq. units) is :

1. $\frac{75}{4}$
2. $\frac{125}{4}$
3. $\frac{625}{4}$
4. $\frac{125}{2}$

Question ID : 4165299766

Option 1 ID : 41652938525

Option 2 ID : 41652938524

Option 3 ID : 41652938523

Option 4 ID : 41652938522

Status : Answered

Chosen Option : 4

Q.10

Let $P = \begin{bmatrix} 1 & 0 & 0 \\ 3 & 1 & 0 \\ 9 & 3 & 1 \end{bmatrix}$ and $Q = [q_{ij}]$ be two

3×3 matrices such that $Q - P^5 = I_3$. Then

$\frac{q_{21} + q_{31}}{q_{32}}$ is equal to :

- Options
1. 10
 2. 135
 3. 15
 4. 9

Question ID : 4165299749

Option 1 ID : 41652938455

Option 2 ID : 41652938457

Option 3 ID : 41652938456

Option 4 ID : 41652938454

Status : Not Answered

Chosen Option : --

Q.11

Let $y = y(x)$ be the solution of the differential

equation, $x \frac{dy}{dx} + y = x \log_e x$, ($x > 1$). If

$2y(2) = \log_e 4 - 1$, then $y(e)$ is equal to :

- Options
1. $-\frac{e}{2}$
 2. $-\frac{e^2}{2}$
 3. $\frac{e}{4}$

4. $\frac{e^2}{4}$

Question ID : 4165299762

Option 1 ID : 41652938508

Option 2 ID : 41652938509

Option 3 ID : 41652938506

Option 4 ID : 41652938507

Status : **Not Answered**

Chosen Option : --

Q.12 The area (in sq. units) of the region bounded by the parabola, $y = x^2 + 2$ and the lines, $y = x + 1$, $x = 0$ and $x = 3$, is :

Options

1. $\frac{15}{4}$

2. $\frac{21}{2}$

3. $\frac{17}{4}$

4. $\frac{15}{2}$

Question ID : 4165299761

Option 1 ID : 41652938505

Option 2 ID : 41652938503

Option 3 ID : 41652938504

Option 4 ID : 41652938502

Status : **Not Answered**

Chosen Option : --

In a random experiment, a fair die is rolled until two fours are obtained in succession. The probability that the experiment will end in the fifth throw of the die is equal to :

Q.13

Options

1. $\frac{200}{6^5}$

2. $\frac{150}{6^5}$

3. $\frac{225}{6^5}$

4. $\frac{175}{6^5}$

Question ID : 4165299772

Option 1 ID : 41652938546

Option 2 ID : 41652938547

Option 3 ID : 41652938548

Option 4 ID : 41652938549

Status : **Answered**

Chosen Option : 3

Let C_1 and C_2 be the centres of the circles $x^2 + y^2 - 2x - 2y - 2 = 0$ and $x^2 + y^2 - 6x - 6y + 14 = 0$ respectively. If P and Q are the points of intersection of these circles, then the area (in sq. units) of the quadrilateral PC_1QC_2 is :

Options

1. 8
2. 6
3. 9
4. 4

Question ID : 4165299765

Option 1 ID : 41652938520

Option 2 ID : 41652938519

Option 3 ID : 41652938521

Option 4 ID : 41652938518

Status : Not Answered

Chosen Option : --

Q.15

The maximum value of $3 \cos \theta + 5 \sin \left(\theta - \frac{\pi}{6} \right)$ for any real value of θ is :

Options

1. $\sqrt{19}$
2. $\frac{\sqrt{79}}{2}$
3. $\sqrt{34}$
4. $\sqrt{31}$

Question ID : 4165299773

Option 1 ID : 41652938551

Option 2 ID : 41652938550

Option 3 ID : 41652938553

Option 4 ID : 41652938552

Status : Answered

Chosen Option : 2

Q.16

Considering only the principal values of inverse functions, the set

$$A = \left\{ x \geq 0 : \tan^{-1}(2x) + \tan^{-1}(3x) = \frac{\pi}{4} \right\}$$

Options

1. contains two elements
2. contains more than two elements
3. is a singleton
4. is an empty set

Question ID : 4165299774

Option 1 ID : 41652938556

Option 2 ID : 41652938557

Option 3 ID : 41652938555

Option 4 ID : 41652938554

Status : Answered

Q.17 If λ be the ratio of the roots of the quadratic equation in x , $3m^2x^2 + m(m-4)x + 2 = 0$, then the least value of m for which

$$\lambda + \frac{1}{\lambda} = 1, \text{ is :}$$

- Options**
1. $2 - \sqrt{3}$
 2. $4 - 3\sqrt{2}$
 3. $-2 + \sqrt{2}$
 4. $4 - 2\sqrt{3}$

Question ID : 4165299748

Option 1 ID : 41652938452

Option 2 ID : 41652938450

Option 3 ID : 41652938453

Option 4 ID : 41652938451

Status : **Not Answered**

Chosen Option : --

Q.18 If a variable line, $3x + 4y - \lambda = 0$ is such that the two circles $x^2 + y^2 - 2x - 2y + 1 = 0$ and $x^2 + y^2 - 18x - 2y + 78 = 0$ are on its opposite sides, then the set of all values of λ is the interval :

- Options**
1. $(2, 17)$
 2. $[13, 23]$
 3. $[12, 21]$
 4. $(23, 31)$

Question ID : 4165299764

Option 1 ID : 41652938515

Option 2 ID : 41652938516

Option 3 ID : 41652938517

Option 4 ID : 41652938514

Status : **Answered**

Chosen Option : 3

Q.19 For $x > 1$, if $(2x)^{2y} = 4e^{2x-2y}$, then

$$(1 + \log_e 2x)^2 \frac{dy}{dx} \text{ is equal to :}$$

- Options**
1. $\frac{x \log_e 2x - \log_e 2}{x}$
 2. $\log_e 2x$
 3. $\frac{x \log_e 2x + \log_e 2}{x}$
 4. $x \log_e 2x$

Question ID : 4165299756

Option 1 ID : 41652938484

Option 2 ID : 41652938483

Option 3 ID : 41652938482

Option 4 ID : 41652938485

Status : **Not Answered**

Chosen Option : --

Q.20 The integral $\int \cos(\log_e x) dx$ is equal to :

(where C is a constant of integration)

Options

1. $\frac{x}{2} [\sin(\log_e x) - \cos(\log_e x)] + C$

2. $x [\cos(\log_e x) + \sin(\log_e x)] + C$

3. $\frac{x}{2} [\cos(\log_e x) + \sin(\log_e x)] + C$

4. $x [\cos(\log_e x) - \sin(\log_e x)] + C$

Question ID : 4165299759

Option 1 ID : 41652938496

Option 2 ID : 41652938494

Option 3 ID : 41652938497

Option 4 ID : 41652938495

Status : **Answered**

Chosen Option : 3

Q.21 A ratio of the 5th term from the beginning to the 5th term from the end in the binomial

expansion of $\left(2^{\frac{1}{3}} + \frac{1}{2(3)^{\frac{1}{3}}}\right)^{10}$ is :

Options

1. $1 : 2(6)^{\frac{1}{3}}$

2. $1 : 4(16)^{\frac{1}{3}}$

3. $4(36)^{\frac{1}{3}} : 1$

4. $2(36)^{\frac{1}{3}} : 1$

Question ID : 4165299752

Option 1 ID : 41652938466

Option 2 ID : 41652938469

Option 3 ID : 41652938468

Option 4 ID : 41652938467

Status : **Not Answered**

Chosen Option : --

Q.22

- Options
1. $\frac{283}{k} = \frac{1+2+3+\dots+k}{k}$. If
 2. 301
 3. $S_1^2 + S_2^2 + \dots + S_{10}^2 = \frac{5}{12} A$, then A
 4. 156 is equal to :

Question ID : 4165299754

Option 1 ID : 41652938475

Option 2 ID : 41652938476

Option 3 ID : 41652938477

Option 4 ID : 41652938474

Status : Answered

Chosen Option : 2

Q.23 The perpendicular distance from the origin to the plane containing the two lines,

$$\frac{x+2}{3} = \frac{y-2}{5} = \frac{z+5}{7} \text{ and}$$

$$\frac{x-1}{1} = \frac{y-4}{4} = \frac{z+4}{7}, \text{ is :}$$

- Options
1. $11\sqrt{6}$
 2. $\frac{11}{\sqrt{6}}$
 3. 11
 4. $6\sqrt{11}$

Question ID : 4165299768

Option 1 ID : 41652938531

Option 2 ID : 41652938532

Option 3 ID : 41652938530

Option 4 ID : 41652938533

Status : Not Answered

Chosen Option : --

Q.24 If the sum of the deviations of 50 observations from 30 is 50, then the mean of these observations is :

- Options
1. 30
 2. 51
 3. 50
 4. 31

Question ID : 4165299771

Option 1 ID : 41652938544

Option 2 ID : 41652938543

Option 3 ID : 41652938542

Option 4 ID : 41652938545

Status : Answered

Chosen Option : 3

Q.25

Options Let S be the set of all points in $(-\pi, \pi)$ at which the function, $f(x) = \min \{\sin x, \cos x\}$ is not differentiable. Then S is a subset of the following ?

1. $\left\{-\frac{\pi}{4}, 0, \frac{\pi}{4}\right\}$
2. $\left\{-\frac{3\pi}{4}, -\frac{\pi}{4}, \frac{3\pi}{4}, \frac{\pi}{4}\right\}$
3. $\left\{-\frac{\pi}{2}, -\frac{\pi}{4}, \frac{\pi}{4}, \frac{\pi}{2}\right\}$
4. $\left\{-\frac{3\pi}{4}, -\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{4}\right\}$

Question ID : 4165299757

Option 1 ID : 41652938489

Option 2 ID : 41652938487

Option 3 ID : 41652938486

Option 4 ID : 41652938488

Status : Answered

Chosen Option : 4

Q.26 Let f and g be continuous functions on $[0, a]$ such that $f(x) = f(a-x)$ and $g(x) + g(a-x) = 4$, then $\int_0^a f(x) g(x) dx$ is equal to :

- Options
1. $4 \int_0^a f(x) dx$
 2. $\int_0^a f(x) dx$
 3. $2 \int_0^a f(x) dx$
 4. $-3 \int_0^a f(x) dx$

Question ID : 4165299760

Option 1 ID : 41652938500

Option 2 ID : 41652938498

Option 3 ID : 41652938499

Option 4 ID : 41652938501

Status : Answered

Chosen Option : 2

Q.27 $\lim_{x \rightarrow \pi/4} \frac{\cot^3 x - \tan x}{\cos(x + \pi/4)}$ is :

- Options
1. 4
 2. $4\sqrt{2}$
 3. $8\sqrt{2}$

4. 8

Question ID : 4165299755

Option 1 ID : 41652938479

Option 2 ID : 41652938478

Option 3 ID : 41652938480

Option 4 ID : 41652938481

Status : Not Answered

Chosen Option : --

Q.28

If $\frac{z-\alpha}{z+\alpha}$ ($\alpha \in \mathbb{R}$) is a purely imaginary number and $|z|=2$, then a value of α is :

Options 1. 2

2. 1

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

4. $\sqrt{2}$

Question ID : 4165299747

Option 1 ID : 41652938447

Option 2 ID : 41652938449

Option 3 ID : 41652938446

Option 4 ID : 41652938448

Status : Answered

Chosen Option : 1

Q.29

Let $S = \{1, 2, 3, \dots, 100\}$. The number of non-empty subsets A of S such that the product of elements in A is even is :

Options 1. $2^{100} - 1$

2. $2^{50} (2^{50} - 1)$

3. $2^{50} - 1$

4. $2^{50} + 1$

Question ID : 4165299746

Option 1 ID : 41652938442

Option 2 ID : 41652938444

Option 3 ID : 41652938443

Option 4 ID : 41652938445

Status : Not Answered

Chosen Option : --

Q.30

If the vertices of a hyperbola be at $(-2, 0)$ and $(2, 0)$ and one of its foci be at $(-3, 0)$, then which one of the following points does not lie on this hyperbola ?

Options 1. $(-6, 2\sqrt{10})$

2. $(2\sqrt{6}, 5)$

3. $(4, \sqrt{15})$

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

Question ID : **4165299767**

Option 1 ID : **41652938529**

Option 2 ID : **41652938527**

Option 3 ID : **41652938526**

Option 4 ID : **41652938528**

Status : **Not Answered**

Chosen Option : --