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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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Participant ID:	[redacted]
Participant Name:	
Test Center Name:	
Test Date:	15/10/2020
Test Time:	2:30 PM - 5:30 PM
Subject:	PCM

Section : **Physics**

Q.1 Two galvanometers 'G_1' and 'G_2' require 2 mA and 3 mA respectively to produce the same deflection. Then

Ans

✗ 1. G_1 and G_2 are equally sensitive.

✓ 2. G_1 is more sensitive than G_2.

✗ 3. G_1 is less sensitive than G_2.

✗ 4. sensitivity of G_2 is $\frac{3}{2}$ times that of G_1.

Question Type : **MCQ**
Question ID : **37135116568**
Option 1 ID : **37135166271**
Option 2 ID : **37135166269**
Option 3 ID : **37135166270**
Option 4 ID : **37135166272**
Status : **Answered**
Chosen Option : **2**

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Q.2 When a photosensitive surface is irradiated by lights of wavelengths λ_1 and λ_2, kinetic energies of emitted photoelectrons are E_1 and E_2 respectively. The work function of the photosensitive surface is

Ans

✗ 1. $\frac{\lambda_2 E_2 - \lambda_1 E_1}{\lambda_2 - \lambda_1}$

✗ 2. $\frac{\lambda_1 E_1 + \lambda_2 E_2}{\lambda_2 + \lambda_1}$

✓ 3. $\frac{\lambda_1 E_1 - \lambda_2 E_2}{\lambda_2 - \lambda_1}$

✗ 4. $\frac{\lambda_2 E_1 + \lambda_2 E_2}{\lambda_2 - \lambda_1}$

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Question Type : **MCQ**
Question ID : **37135116591**
Option 1 ID : **37135166363**
Option 2 ID : **37135166362**
Option 3 ID : **37135166361**
Option 4 ID : **37135166364**
Status : **Answered**
Chosen Option : **3**

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Q.3 The unknown resistances are connected in two gaps of a metre bridge. The null point is at 20 cm from zero end. A resistance of 15Ω is connected in series with the smaller of the two. The null point shifts to 40 cm. The smaller resistance is

Ans

1. ✔ 9 Ω
2. ✘ 7 Ω
3. ✘ 3 Ω
4. ✘ 5 Ω

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Question Type : **MCQ**
Question ID : **37135116578**
Option 1 ID : **37135166309**
Option 2 ID : **37135166310**
Option 3 ID : **37135166312**
Option 4 ID : **37135166311**
Status : **Answered**
Chosen Option : **1**

Q.4 If a gas is compressed isothermally then the r.m.s. velocity of the molecules

Ans

1. ✔ remains the same.
2. ✘ increases.
3. ✘ decreases.
4. ✘ first decreases and then increases.

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Question Type : **MCQ**
Question ID : **37135116577**
Option 1 ID : **37135166305**
Option 2 ID : **37135166307**
Option 3 ID : **37135166306**
Option 4 ID : **37135166308**
Status : **Answered**
Chosen Option : **1**

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Q.5 A circular and a square coil is prepared from two identical metal wires and a current is passed through them. Ratio of magnetic dipole moment associated with circular coil to that with square coil is

Ans

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

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

3. π

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

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Question Type : **MCQ**
Question ID : **37135116555**
Option 1 ID : **37135166220**
Option 2 ID : **37135166217**
Option 3 ID : **37135166219**
Option 4 ID : **37135166218**
Status : **Answered**
Chosen Option : **2**

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Q.6 Light of incident frequency 2 times the threshold frequency is incident on a photosensitive material. If the incident frequency is made $\left(\frac{1}{3}\right)^{rd}$ and intensity is doubled then the photoelectric current will

Ans

1. decrease.

2. increase.

3. be halved.

4. be zero.

Question Type : **MCQ**
Question ID : **37135116566**
Option 1 ID : **37135166264**
Option 2 ID : **37135166263**
Option 3 ID : **37135166262**
Option 4 ID : **37135166261**
Status : **Answered**
Chosen Option : **2**

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Q.7 The polarising angle for a transparent medium is 'θ' and 'V' is the speed of light in that medium, then relation between 'θ' and 'V' is (c = velocity of light)

Ans

✗ 1. $\theta = \sin^{-1}\left(\frac{V}{c}\right)$

✗ 2. $\theta = \tan^{-1}\left(\frac{V}{c}\right)$

✓ 3. $\theta = \cot^{-1}\left(\frac{V}{c}\right)$

✗ 4. $\theta = \cos^{-1}\left(\frac{V}{c}\right)$

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Question Type : **MCQ**
Question ID : **37135116600**
Option 1 ID : **37135166398**
Option 2 ID : **37135166400**
Option 3 ID : **37135166399**
Option 4 ID : **37135166397**
Status : **Answered**
Chosen Option : **3**

Q.8 In energy band diagram of insulators, a band gap and the conduction band is respectively

Ans

✓ 1. very high, empty.

✗ 2. very low, partially filled.

✗ 3. very high, completely filled.

✗ 4. very low, empty.

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Question Type : **MCQ**
Question ID : **37135116597**
Option 1 ID : **37135166385**
Option 2 ID : **37135166388**
Option 3 ID : **37135166387**
Option 4 ID : **37135166386**
Status : **Answered**
Chosen Option : **1**

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Q.9 An alternating e.m.f. is given by e= e_0 sin ωt. In what time the e.m.f. will have half its maximum value, if 'e' starts from zero? (T = Time period)

$\left(\sin 30^\circ = \cos 60^\circ = 0 \cdot 5, \quad \cos 30^\circ = \sin 60^\circ = \frac{\sqrt{3}}{2}\right)$

Ans

✔ 1. $\frac{T}{12}$

✘ 2. $\frac{T}{16}$

✘ 3. $\frac{T}{8}$

✘ 4. $\frac{T}{4}$

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Question Type : **MCQ**
Question ID : **37135116553**
Option 1 ID : **37135166211**
Option 2 ID : **37135166212**
Option 3 ID : **37135166210**
Option 4 ID : **37135166209**
Status : **Answered**
Chosen Option : **4**

Q.10 Due to surface tension, the excess pressure inside a smaller drop is 9 units. If 27 smaller drops combine, then the excess pressure inside the bigger drop is

Ans

✘ 1. 2 units

✘ 2. 1 unit

✔ 3. 3 units

✘ 4. 4 units

6

Question Type : **MCQ**
Question ID : **37135116579**
Option 1 ID : **37135166315**
Option 2 ID : **37135166316**
Option 3 ID : **37135166314**
Option 4 ID : **37135166313**
Status : **Answered**
Chosen Option : **3**

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Q.11 The 3rd overtone of a closed organ pipe is in unison with 3rd overtone of an open pipe. The ratio of the length of the closed pipe to length of open pipe is

Ans

✔ 1. $\frac{7}{8}$

✘ 2. $\frac{4}{3}$

✘ 3. $\frac{6}{5}$

✘ 4. $\frac{7}{9}$

8

Question Type : **MCQ**
Question ID : **37135116554**
Option 1 ID : **37135166215**
Option 2 ID : **37135166214**
Option 3 ID : **37135166213**
Option 4 ID : **37135166216**
Status : **Answered**
Chosen Option : **1**

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Q.12 What should be the velocity of earth due to rotation about its own axis so that the weight at equator becomes $\left(\frac{3}{5}\right)^{th}$ of initial value ?

(Radius of earth on equator = 6400 km, $g = 10\frac{m}{s^2}$, $\cos 0° = 1$)

Ans

1. $3{\cdot}5 \times 10^{-4}\ \frac{rad}{s}$

2. $7{\cdot}91 \times 10^{-4}\ \frac{rad}{s}$

3. $6{\cdot}5 \times 10^{-4}\ \frac{rad}{s}$

4. $2{\cdot}5 \times 10^{-4}\ \frac{rad}{s}$

Question Type : **MCQ**
Question ID : **37135116559**
Option 1 ID : **37135166234**
Option 2 ID : **37135166236**
Option 3 ID : **37135166235**
Option 4 ID : **37135166233**
Status : **Answered**
Chosen Option : **2**

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Q.13 Two identical parallel plate air capacitors are connected in series to a battery of e..m.f. 'V'. If one of the capacitor is inserted in liquid of dielectric constant 'K', then potential difference of the other capacitor will become

Ans

1. $\frac{K}{V(K+1)}$

2. $\frac{KV}{K+1}$

3. $\frac{K+1}{KV}$

4. $\frac{K}{V(1-K)}$

Question Type : **MCQ**
Question ID : **37135116583**
Option 1 ID : **37135166331**
Option 2 ID : **37135166329**
Option 3 ID : **37135166330**
Option 4 ID : **37135166332**
Status : **Answered**
Chosen Option : **2**

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Q.14 From a disc of mass 'M' and radius 'R' a circular hole of diameter R is cut whose rim passes through the centre. The moment of inertia of the remaining part of the disc about perpendicular axis passing through the centre is

Ans

✗ 1. $\frac{11MR^2}{32}$

✗ 2. $\frac{7MR^2}{32}$

3

✗ 3. $\frac{9MR^2}{32}$

✓ 4. $\frac{13MR^2}{32}$

Question Type : **MCQ**
Question ID : **37135116552**
Option 1 ID : **37135166207**
Option 2 ID : **37135166205**
Option 3 ID : **37135166206**
Option 4 ID : **37135166208**
Status : **Answered**
Chosen Option : **2**

Q.15 A glass convex lens is of refractive index 1·55 with both faces of same radius of curvature. What will be the radius of curvature if focal length is to be 20 cm?

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Ans

✓ 1. 22 cm

✗ 2. 21 cm

✗ 3. 18 cm

✗ 4. 20 cm

Question Type : **MCQ**
Question ID : **37135116565**
Option 1 ID : **37135166260**
Option 2 ID : **37135166259**
Option 3 ID : **37135166257**
Option 4 ID : **37135166258**
Status : **Answered**
Chosen Option : **1**

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Q.16 In communication system, the range for line of sight propagation in case of earth is 'd', for the height of antenna (h). If 'h' is doubled then the new range is

Ans

✗ 1. $\frac{d}{\sqrt{2}}$

✗ 2. $\frac{\sqrt{2}}{d}$

✗ 3. $\frac{d}{2}$

✓ 4. $\sqrt{2}\,d$

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Question Type : **MCQ**
Question ID : **37135116571**
Option 1 ID : **37135166282**
Option 2 ID : **37135166283**
Option 3 ID : **37135166284**
Option 4 ID : **37135166281**
Status : **Answered**
Chosen Option : **4**

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Q.17 A uniform metal wire of length 'L', mass ' M' and density 'ϱ' is under a tension ' T '. If the speed of transverse wave along the wire is 'V', then area of cross-section of the wire is

Ans

1. $\frac{V}{T\varrho}$

2. $\frac{T}{V^2\varrho}$

3. $\frac{T^2}{V\varrho}$

4. $\frac{V^2}{T\varrho}$

8

Question Type : **MCQ**
Question ID : **37135116572**
Option 1 ID : **37135166287**
Option 2 ID : **37135166285**
Option 3 ID : **37135166286**
Option 4 ID : **37135166288**
Status : **Answered**
Chosen Option : **2**

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Q.18 A cylindrical magnetic rod has length 5 cm and diameter 1 cm. It has uniform magnetization $5{\cdot}3 \times 10^3 \frac{A}{m^3}$. Its net magnetic dipole moment is nearly $\left(\pi = \frac{22}{7}\right)$

Ans

1. $2 \cdot 5 \times 10^{-2} \frac{J}{T}$

2. $0 \cdot 5 \times 10^{-2} \frac{J}{T}$

3. $2 \times 10^{-2} \frac{J}{T}$

4. $10^{-2} \frac{J}{T}$

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Question Type : **MCQ**
Question ID : **37135116563**
Option 1 ID : **37135166251**
Option 2 ID : **37135166252**
Option 3 ID : **37135166250**
Option 4 ID : **37135166249**
Status : **Answered**
Chosen Option : **3**

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Q.19 A uniform rod AB of mass 'm' and length 'ℓ' is at rest on a smooth horizontal surface. An impulse 'P' is applied to the end B. The time taken by the rod to turn through a right angle is

Ans

1. $\frac{\pi}{12}\frac{m\ell}{P}$

2. $\frac{\pi P}{m\ell}$

3. $2\pi\frac{m\ell}{P}$

4. $2\frac{\pi P}{m\ell}$

Question Type : **MCQ**
Question ID : **37135116574**
Option 1 ID : **37135166295**
Option 2 ID : **37135166296**
Option 3 ID : **37135166293**
Option 4 ID : **37135166294**
Status : **Answered**
Chosen Option : **1**

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Q.20 The magnitude of total energy and angular momentum of an electron in the n^{th} orbit of a Bohr atom is denoted by E_n and L_n respectively. Then

Ans

✗ 1. $E_n \propto L_n$

✗ 2. $E_n \propto L_n^3$

✓ 3. $E_n \propto \frac{1}{L_n^2}$

✗ 4. $E_n \propto \frac{1}{L_n}$

18

Question Type : **MCQ**
Question ID : **37135116556**
Option 1 ID : **37135166223**
Option 2 ID : **37135166224**
Option 3 ID : **37135166221**
Option 4 ID : **37135166222**
Status : **Answered**
Chosen Option : **3**

Q.21 A ray of light passes through equilateral prism such that the angle of incidence is equal to angle of emergence and each of these angles is equal to $\left(\frac{3}{4}\right)^{th}$ the angle of prism. The angle of deviation is

Ans

✗ 1. 35°

✗ 2. 40°

✗ 3. 20°

✓ 4. 30°

10

Question Type : **MCQ**
Question ID : **37135116570**
Option 1 ID : **37135166279**
Option 2 ID : **37135166280**
Option 3 ID : **37135166277**
Option 4 ID : **37135166278**
Status : **Answered**
Chosen Option : **4**

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Q.22 A pipe closed at one end has lengh 0·8 cm. At its open end a 0·5 m long uniform string is vibrating in its second harmonic and it resonates with the fundamental frequency of the pipe. If the tension in the wire is 50 N and the speed of sound is 320 m/s, the mass of the string is

Ans

✗ 1. 8 gram

✗ 2. 2 gram

✓ 3. 10 gram

✗ 4. 4 gram

8

Question Type : **MCQ**
Question ID : **37135116567**
Option 1 ID : **37135166266**
Option 2 ID : **37135166268**
Option 3 ID : **37135166265**
Option 4 ID : **37135166267**
Status : **Answered**
Chosen Option : **3**

Q.23 Photodiode is a device

Ans

✗ 1. in which photo current is dependent on the reverse bias.

✗ 2. which is always operated in forward bias.

✗ 3. in which photo current is independent of incident radiation.

✓ 4. which is always operted in reverse bias.

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Question Type : **MCQ**
Question ID : **37135116576**
Option 1 ID : **37135166304**
Option 2 ID : **37135166302**
Option 3 ID : **37135166303**
Option 4 ID : **37135166301**
Status : **Answered**
Chosen Option : **2**

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Q.24 Two cars of masses m_1 and m_2 are moving in circles of radii r_1 and r_2 respectively. Their speeds are such that they make complete circles in the same time t. The ratio of their centripetal force is

Ans

1. $m_1 : m_2$

2. $r_1 : r_2$

3. $1 : 1$

4. $m_1 r_1 : m_2 r_2$

Question Type : **MCQ**
Question ID : **37135116596**
Option 1 ID : **37135166383**
Option 2 ID : **37135166382**
Option 3 ID : **37135166384**
Option 4 ID : **37135166381**
Status : **Answered**
Chosen Option : **4**

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Q.25 A circular current carrying coil has radius R. At what distance from the centre of the coil on the axis, the magnetic induction will become $\frac{1}{8}^{th}$ of its value at the centre of the coil?

Ans

✗ 1. $\frac{2R}{\sqrt{3}}$

✓ 2. $R\sqrt{3}$

✗ 3. $\frac{R}{2\sqrt{3}}$

✗ 4. $\frac{R}{\sqrt{3}}$

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Question Type : **MCQ**
Question ID : **37135116560**
Option 1 ID : **37135166239**
Option 2 ID : **37135166237**
Option 3 ID : **37135166240**
Option 4 ID : **37135166238**
Status : **Answered**
Chosen Option : **2**

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Q.26 In the case of conical pendulum, if T is the tension in the string and θ is the semivertical angle of cone, then the component of tension which balances the centrifugal force in equilibrium position is

Ans

1. $T \sin \theta$

2. $\frac{(T \sin \theta)}{2}$

3. $T \tan \theta$

4. $T \cos \theta$

Question Type :	**MCQ**
Question ID :	**37135116569**
Option 1 ID :	**37135166273**
Option 2 ID :	**37135166276**
Option 3 ID :	**37135166275**
Option 4 ID :	**37135166274**
Status :	**Answered**
Chosen Option :	**1**

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Q.27 A molecule consists of two atoms each of mass 'm' and separated by a distance 'd'. At room temperature the average rotational kinetic energy is 'E', then its angular frequency is

Ans

✔ 1. $\frac{2}{d}\sqrt{\frac{E}{m}}$

✘ 2. $\sqrt{\frac{m}{Ed}}$

✘ 3. $\frac{d}{2}\sqrt{\frac{m}{E}}$

✘ 4. $\sqrt{\frac{Ed}{m}}$

3

Question Type : **MCQ**
Question ID : **37135116564**
Option 1 ID : **37135166253**
Option 2 ID : **37135166256**
Option 3 ID : **37135166254**
Option 4 ID : **37135166255**
Status : **Answered**
Chosen Option : **1**

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Q.28 A wire of length 'L' and radius 'r' is loaded with a weight 'Mg'. If 'Y' and 'σ' denote the Young's modulus and poisson's ratio of the material of the wire respectively, then the decrease in the radius of the wire (Δr) is given by

Ans

1. $\frac{MgY}{\pi r\sigma}$

2. $\frac{Mg\sigma}{\pi rY}$



3. $\frac{\sigma\pi r}{MgY}$

4. $\frac{Mgr}{\sigma\pi Y}$

Question Type : **MCQ**
Question ID : **37135116562**
Option 1 ID : **37135166248**
Option 2 ID : **37135166247**
Option 3 ID : **37135166245**
Option 4 ID : **37135166246**
Status : **Answered**
Chosen Option : **2**

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Q.29 In an experiment of the measurement of 'g' using simple pendulum, the time period was measured with an accuracy of 0·2% while the length was measured with an accuracy of 0·5%. The percentage accuracy in the value of 'g' thus obtained is

Ans

✗ 1. 0·7%

✗ 2. 0·3%

✓ 3. 0·9%

✗ 4. 0·1%

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Question Type : **MCQ**
Question ID : **37135116580**
Option 1 ID : **37135166319**
Option 2 ID : **37135166318**
Option 3 ID : **37135166320**
Option 4 ID : **37135166317**
Status : **Answered**
Chosen Option : **3**

Q.30 The magnetic moment is NOT associated with

Ans

✗ 1. accelerated charge.

✗ 2. charge moving with constant velocity.

✓ 3. stationary charge.

✗ 4. retarded charge.

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Question Type : **MCQ**
Question ID : **37135116581**
Option 1 ID : **37135166321**
Option 2 ID : **37135166324**
Option 3 ID : **37135166322**
Option 4 ID : **37135166323**
Status : **Answered**
Chosen Option : **3**

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Q.31 Water rises to a height 3 cm in a capillary tube. If cross-sectional area of capillary tube is reduced to $\frac{1}{9}^{th}$ of initial area then water will rise to a height of

Ans

✔ 1. 9 cm

✘ 2. 6 cm

✘ 3. 7 cm

✘ 4. 8 cm

6

Question Type : **MCQ**
Question ID : **37135116582**
Option 1 ID : **37135166325**
Option 2 ID : **37135166328**
Option 3 ID : **37135166327**
Option 4 ID : **37135166326**
Status : **Answered**
Chosen Option : **1**

Q.32 A potentiometer is used to measure the potential difference between A and B, the null point is obtained at 0·9 m. Now potential difference between A and C is measured, the null point is obtained at 0·3 m. The ratio $\frac{E_2}{E_1}$ is $(E_1 > E_2)$



13

Ans

✘ 1. 3 : 1

✘ 2. 3 : 2

✔ 3. 2 : 3

✘ 4. 1 : 3

Question Type : **MCQ**
Question ID : **37135116558**
Option 1 ID : **37135166232**
Option 2 ID : **37135166231**
Option 3 ID : **37135166229**
Option 4 ID : **37135166230**
Status : **Answered**
Chosen Option : **3**

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Q.33 Let the series limit for Balmer series be 'λ_1' and the longest wavelength for Brackett series be 'λ_2'. Then λ_1 and λ_2 are related as

Ans

1. $\lambda_2 = 0{\cdot}09\,\lambda_1$
2. $\lambda_1 = 0{\cdot}09\,\lambda_2$
3. $\lambda_1 = 1{\cdot}11\,\lambda_2$
4. $\lambda_2 = 1{\cdot}11\,\lambda_1$

18

Question Type : **MCQ**
Question ID : **37135116587**
Option 1 ID : **37135166345**
Option 2 ID : **37135166347**
Option 3 ID : **37135166346**
Option 4 ID : **37135166348**
Status : **Answered**
Chosen Option : **1**

Q.34 Two condensers of capacities ' C' and '2C' are connected in parallel and then in series with 3rd condenser of capacity '3C'. The combination is charged to 'V' volt. The charge on the condenser of capacity 'C' is

Ans

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

12

Question Type : **MCQ**
Question ID : **37135116561**
Option 1 ID : **37135166244**
Option 2 ID : **37135166241**
Option 3 ID : **37135166243**
Option 4 ID : **37135166242**
Status : **Answered**
Chosen Option : **2**

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Q.35 A vehicle moving with 15 km/hr comes to rest by covering 5m distance by applying brakes. If the same vehicle moves at 45 km/hr, then by applying brakes, it will come to rest by covering a distance

Ans

1. 15 m.
2. 45 m.
3. 60 m.
4. 30 m.

23

Question Type : **MCQ**
Question ID : **37135116585**
Option 1 ID : **37135166337**
Option 2 ID : **37135166339**
Option 3 ID : **37135166340**
Option 4 ID : **37135166338**
Status : **Answered**
Chosen Option : **2**

Q.36 Alternating current of peak value $\left(\frac{2}{\pi}\right)$ A flows through the primary coil of transformer. The coefficient of mutual inductance between primary and secondary coil is 1 H. The peak e.m.f. induced in secondary coil is (Frequency of a.c. = 50 Hz)

Ans

1. 400 V
2. 200 V
3. 300 V
4. 100 V

16

Question Type : **MCQ**
Question ID : **37135116573**
Option 1 ID : **37135166292**
Option 2 ID : **37135166290**
Option 3 ID : **37135166291**
Option 4 ID : **37135166289**
Status : **Answered**
Chosen Option : **2**

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Q.37 A metal wire of length 'L' is bent to form a circular coil of number of turns 'n'. The coil is placed in magnetic field 'B' and current is passed through the coil. The maximum torque acting on the coil is

14

Ans

1. $\frac{BIL^2}{4\pi n}$

2. $\frac{BIL^2}{2\pi n}$

3. $\frac{B^2IL}{2\pi n}$

4. $\frac{B^2IL}{4\pi n}$

Question Type : **MCQ**
Question ID : **37135116589**
Option 1 ID : **37135166355**
Option 2 ID : **37135166353**
Option 3 ID : **37135166354**
Option 4 ID : **37135166356**
Status : **Answered**
Chosen Option : **1**

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Q.38 The ratio of specific heat at constant pressure to specific heat at constant volume (γ) for a gas is $\left(1+\frac{2}{f}\right)$ where f is the number of degrees of freedom of a molecule of a gas. The ratio of 'γ_d' for rigid diatomic to 'γ_m' for monoatomic is

Ans

1. $\frac{14}{23}$
2. $\frac{25}{21}$
3. $\frac{21}{25}$
4. $\frac{23}{14}$

Question Type : **MCQ**
Question ID : **37135116598**
Option 1 ID : **37135166392**
Option 2 ID : **37135166389**
Option 3 ID : **37135166390**
Option 4 ID : **37135166391**
Status : **Answered**
Chosen Option : **3**

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Q.39 A lift is tied with thick iron ropes having mass 'M'. The maximum acceleration of the lift is 'a' m/s^2 and maximum safe stress is 's' N/m^2. The minimum diameter of the rope is (g = acceleration due to gravity)

Ans

✗ 1. $\left[\frac{2M(g+a)}{\pi s}\right]^{\frac{1}{2}}$

✗ 2. $\left[\frac{2M(g-a)}{\pi s}\right]^{\frac{1}{2}}$

✓ 3. $\left[\frac{4M(g+a)}{\pi s}\right]^{\frac{1}{2}}$

✗ 4. $\left[\frac{4M(g-a)}{\pi s}\right]^{\frac{1}{2}}$



Question Type : **MCQ**
Question ID : **37135116588**
Option 1 ID : **37135166349**
Option 2 ID : **37135166350**
Option 3 ID : **37135166351**
Option 4 ID : **37135166352**
Status : **Answered**
Chosen Option : **3**

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Q.40 A block of mass m is moving on a rough horizontal surface. The coefficient of kinetic friction between block and surface is μ_k. The net force exerted by the surface on the block is (g = acceleration due to gravity)

Ans

1. $mg(1+\mu_k)^{1/2}$

2. $[mg(1+\mu_k)]^{1/2}$

3. $mg(1+\mu_k^2)$

4. $mg(1+\mu_k^2)^{1/2}$

Question Type : **MCQ**
Question ID : **37135116575**
Option 1 ID : **37135166297**
Option 2 ID : **37135166300**
Option 3 ID : **37135166298**
Option 4 ID : **37135166299**
Status : **Answered**
Chosen Option : **1**

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Q.41

Time period of a simple pendulum will be doubled if we

Ans

✗ 1. increase the length two times.

✗ 2. decrease the length two times.

✗ 3. decrease the length four times.

✓ 4. increase the length four times.

Question Type : **MCQ**
Question ID : **37135116584**
Option 1 ID : **37135166335**
Option 2 ID : **37135166333**
Option 3 ID : **37135166334**
Option 4 ID : **37135166336**
Status : **Answered**
Chosen Option : **4**

Q.42

A force $(5\hat{\imath} - 2\hat{\jmath} + 3\hat{k})$ N acts on a body of mass 2 kg and displaces it from $(3\hat{\imath} + 2\hat{\jmath} - \hat{k})$ m to $(6\hat{\imath} - \hat{\jmath} + 4\hat{k})$ m. The work done is

Ans

✗ 1. 27 J

✗ 2. 18 J

✓ 3. 36 J

✗ 4. 9 J

Question Type : **MCQ**
Question ID : **37135116590**
Option 1 ID : **37135166359**
Option 2 ID : **37135166358**
Option 3 ID : **37135166360**
Option 4 ID : **37135166357**
Status : **Answered**
Chosen Option : **3**

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Q.43

If $\vec{A} = a_1\,\hat{i} + a_2\,\hat{j}$ and $\vec{B} = b_1\,\hat{i} + b_2\,\hat{j}$ are perpendicular to each other then

Ans

✗ 1. $\frac{b_2}{a_1} = -\frac{a_2}{b_1}$

✗ 2. $\frac{a_1}{b_2} = +\frac{a_2}{b_1}$

✗ 3. $\frac{b_2}{a_1} = +\frac{a_2}{b_1}$

✓ 4. $\frac{a_1}{b_2} = -\frac{a_2}{b_1}$

22

Question Type : **MCQ**
Question ID : **37135116595**
Option 1 ID : **37135166377**
Option 2 ID : **37135166378**
Option 3 ID : **37135166379**
Option 4 ID : **37135166380**
Status : **Answered**
Chosen Option : **4**

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Q.44 A metal ball released from height 'h' makes perfectly elastic collision with ground. The frequency of periodic vibratory motion is (g = acceleration due to gravity)

Ans

1. $\frac{1}{2\pi}\sqrt{\frac{g}{2h}}$

2. $\frac{1}{2}\sqrt{\frac{g}{2h}}$

3. $\frac{1}{2}\sqrt{\frac{2h}{g}}$

4. $\frac{1}{2\pi}\sqrt{\frac{2h}{g}}$

23

Question Type : **MCQ**
Question ID : **37135116592**
Option 1 ID : **37135166367**
Option 2 ID : **37135166365**
Option 3 ID : **37135166366**
Option 4 ID : **37135166368**
Status : **Answered**
Chosen Option : **4**

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Q.45 In biprism experiment, if 5th bright band with wavelength 'λ_1' coincides with 6th dark band with wavelength 'λ_2' then the ratio $\left(\frac{\lambda_2}{\lambda_1}\right)$ is

Ans

1. $\frac{10}{11}$ ✔

2. $\frac{7}{9}$ ✘

3. $\frac{11}{10}$ ✘

4. $\frac{9}{7}$ ✘



Question Type : **MCQ**
Question ID : **37135116551**
Option 1 ID : **37135166202**
Option 2 ID : **37135166203**
Option 3 ID : **37135166201**
Option 4 ID : **37135166204**
Status : **Answered**
Chosen Option : **3**

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Q.46 A particle of mass 'm' is executing simple harmonic motion about its mean position. If 'A' is the amplitude and 'T' is the period of S.H.M., then the total energy of the particle is

Ans

1. $\frac{4\pi^2 mA^2}{T^2}$

2. $\frac{8\pi^2 mA^2}{T^2}$

3. $\frac{2\pi^2 mA^2}{T^2}$

4. $\frac{\pi^2 mA^2}{T^2}$

Question Type : **MCQ**
Question ID : **37135116557**
Option 1 ID : **37135166227**
Option 2 ID : **37135166228**
Option 3 ID : **37135166226**
Option 4 ID : **37135166225**
Status : **Answered**
Chosen Option : **3**

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Q.47 In Young's double slit experiment, the resultant intensity of light at a point on the screen is 'I' when the path difference is 'λ'. When the path difference is $\frac{\lambda}{4}$, the intensity at a point will be (λ = wavelength of light, $\cos 180° = -1, \cos 45° = \frac{1}{\sqrt{2}}$)

Ans

1. Zero

2. I

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

4. $\frac{I}{4}$

Question Type : **MCQ**
Question ID : **37135116593**
Option 1 ID : **37135166369**
Option 2 ID : **37135166370**
Option 3 ID : **37135166371**
Option 4 ID : **37135166372**
Status : **Answered**
Chosen Option : **3**

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Q.48 The SI unit of $\frac{G}{g}$ is (g = acceleration due to gravity, G = constant of gravitation)

Ans

1. $\frac{kg}{m^2}$
2. $\frac{m^2}{kg}$
3. $\frac{m}{kg}$
4. $\frac{kg}{m}$

Question Type : **MCQ**
Question ID : **37135116586**
Option 1 ID : **37135166343**
Option 2 ID : **37135166344**
Option 3 ID : **37135166342**
Option 4 ID : **37135166341**
Status : **Answered**
Chosen Option : **3**

Q.49 For a perfectly elastic collision, the coefficient of restitution e is

Ans

1. zero
2. 1
3. 0·75
4. 0·5

Question Type : **MCQ**
Question ID : **37135116599**
Option 1 ID : **37135166393**
Option 2 ID : **37135166396**
Option 3 ID : **37135166395**
Option 4 ID : **37135166394**
Status : **Answered**
Chosen Option : **2**

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Q.50

A simple harmonic progressive wave is represented as $Y = A \sin 2\pi \left(nt - \frac{x}{\lambda}\right)$ cm. If the maximum particle velocity is four times the wave velocity, then the wavelength of the wave is

Ans

1. $\frac{\pi A}{4}$

2. $4\pi A$

3. $2\pi A$

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



Question Type : **MCQ**
Question ID : **37135116594**
Option 1 ID : **37135166374**
Option 2 ID : **37135166376**
Option 3 ID : **37135166375**
Option 4 ID : **37135166373**
Status : **Answered**
Chosen Option : **4**

Section : **Chemistry**

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Q.1

Which of the following reagents is used in Hoffmann elimination reaction of amines

Ans

✗ 1. $NaNO_2 + HCl$

✗ 2. CH_3COCl

✓ 3. $Ag_2O/H_2O, \Delta$

✗ 4. $CHCl_3 + KOH$

Question Type : **MCQ**
Question ID : **37135116609**
Option 1 ID : **37135166436**
Option 2 ID : **37135166433**
Option 3 ID : **37135166434**
Option 4 ID : **37135166435**
Status : **Answered**
Chosen Option : **4**

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Q.2

What will be the volume of oxygen gas produced, If the reaction
$2\ KClO_{3(s)} \longrightarrow 2\ KCl_{(s)} + 3\ O_{2(g)}\ \Delta H^\circ = -78\ kJ$
is carried out at S.T.P. ?

Ans

1. 48·0 L

2. 44·8 L

3. 22·4 L

4. 67·2 L

Question Type : **MCQ**
Question ID : **37135116603**
Option 1 ID : **37135166411**
Option 2 ID : **37135166410**
Option 3 ID : **37135166409**
Option 4 ID : **37135166412**
Status : **Answered**
Chosen Option : **4**

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Q.3

Which of the following alcohol is more acidic ?

Ans

✗ 1. $(CH_3)_3C\text{-}OH$

✗ 2. $(CH_3)_2CH\text{-}OH$

✓ 3. CH_3OH

✗ 4. $CH_3\text{-}CH_2\text{-}OH$

Question Type : **MCQ**
Question ID : **37135116635**
Option 1 ID : **37135166540**
Option 2 ID : **37135166539**
Option 3 ID : **37135166537**
Option 4 ID : **37135166538**
Status : **Answered**
Chosen Option : **3**

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Q.4

The increasing order of reactivity of alkaline earth metals with water is

Ans

✗ 1. $Mg < Sr < Ca < Ba$

✗ 2. $Ba < Mg < Ca < Sr$

✗ 3. $Ba < Sr < Ca < Mg$

✓ 4. $Mg < Ca < Sr < Ba$

Question Type : **MCQ**
Question ID : **37135116647**
Option 1 ID : **37135166587**
Option 2 ID : **37135166588**
Option 3 ID : **37135166586**
Option 4 ID : **37135166585**
Status : **Answered**
Chosen Option : **3**

Q.5

Identify the catalyst used in the manufacture of high density polythene.

Ans

✗ 1. MnO_2

✗ 2. Co-Th alloy

✓ 3. $TiCl_4$ along with $Al(C_2H_5)_3$

✗ 4. V_2O_5

Question Type : **MCQ**
Question ID : **37135116608**
Option 1 ID : **37135166432**
Option 2 ID : **37135166429**
Option 3 ID : **37135166431**
Option 4 ID : **37135166430**
Status : **Answered**
Chosen Option : **3**

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Q.6 For first order reaction the slope of the graph of $\log_{10}[A]_t$ Vs. time is equal to

Ans

1. k

2. $-k/2.303$

3. $-k$

4. $k/2.303$

Question Type : **MCQ**
Question ID : **37135116601**
Option 1 ID : **37135166403**
Option 2 ID : **37135166402**
Option 3 ID : **37135166404**
Option 4 ID : **37135166401**
Status : **Answered**
Chosen Option : **2**

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Q.7

What is oxidation number of Ru in $[Ru(NH_3)_5H_2O]Cl_2$?

Ans

1. $+6$

2. $+5$

3. $+1$

4. $+2$

Question Type : **MCQ**
Question ID : **37135116605**
Option 1 ID : **37135166417**
Option 2 ID : **37135166418**
Option 3 ID : **37135166420**
Option 4 ID : **37135166419**
Status : **Answered**
Chosen Option : **4**

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Q.8

Which among the following ionic species has least precipitating power ?

Ans

✔ 1. Cl^{-}

✘ 2. SO_4^{-2}

✘ 3. Mg^{+2}

✘ 4. Al^{+3}

Question Type : **MCQ**
Question ID : **37135116634**
Option 1 ID : **37135166536**
Option 2 ID : **37135166535**
Option 3 ID : **37135166534**
Option 4 ID : **37135166533**
Status : **Answered**
Chosen Option : **1**

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Q.9

Which polymer among the following does NOT contain ester linkage in it ?

Ans

1. Dextron

2. PHBV

3. Dacron

4. Nylon-2-nylon-6

Question Type : **MCQ**
Question ID : **37135116627**
Option 1 ID : **37135166506**
Option 2 ID : **37135166507**
Option 3 ID : **37135166508**
Option 4 ID : **37135166505**
Status : **Answered**
Chosen Option : **3**

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Q.10 Which among the following is a correct formula of Barium tetrachlorocuprate(II) ?

Ans

✗ 1. $Cu[BaCl_2]Cl_2$

✗ 2. $Ba[CuCl_2]Cl_2$

✗ 3. $Cu[BaCl_4]$

✓ 4. $Ba[CuCl_4]$

Question Type : **MCQ**
Question ID : **37135116624**
Option 1 ID : **37135166496**
Option 2 ID : **37135166495**
Option 3 ID : **37135166494**
Option 4 ID : **37135166493**
Status : **Answered**
Chosen Option : **4**

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Q.11

What is the order of reaction for decomposition of gaseous acetaldehyde ?

Ans

✗ 1. 1

✗ 2. 2

✓ 3. 1.5

✗ 4. 0

Question Type : **MCQ**
Question ID : **37135116640**
Option 1 ID : **37135166558**
Option 2 ID : **37135166559**
Option 3 ID : **37135166560**
Option 4 ID : **37135166557**
Status : **Answered**
Chosen Option : **2**

Q.12

Which among the following elements is not present in salvarsan ?

Ans

✓ 1. P

✗ 2. O

✗ 3. N

✗ 4. As

Question Type : **MCQ**
Question ID : **37135116646**
Option 1 ID : **37135166584**
Option 2 ID : **37135166583**
Option 3 ID : **37135166582**
Option 4 ID : **37135166581**
Status : **Answered**
Chosen Option : **1**

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Q.13

Identify 'A' in the following reaction

$$C_2H_5OH + HCl \xrightarrow{A} C_2H_5Cl + H_2O$$

Ans

1. anhydrous $ZnCl_2$ ✔

2. pyridine ✘

3. conc. H_2SO_4 ✘

4. $NaNO_2$ ✘

Question Type : **MCQ**
Question ID : **37135116629**
Option 1 ID : **37135166513**
Option 2 ID : **37135166515**
Option 3 ID : **37135166514**
Option 4 ID : **37135166516**
Status : **Answered**
Chosen Option : **1**

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Q.14

What is the oxidation state of chlorine atom in chloric acid ?

Ans

1. $+3$

2. -1

3. $+5$

4. $+1$

Question Type : **MCQ**
Question ID : **37135116644**
Option 1 ID : **37135166575**
Option 2 ID : **37135166574**
Option 3 ID : **37135166576**
Option 4 ID : **37135166573**
Status : **Answered**
Chosen Option : **3**

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Q.15

Which among the following is a globular protein ?

Ans

1. Insulin

2. Myosin

3. Collagen

4. Fibroin

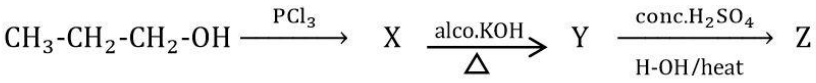
Question Type : **MCQ**
Question ID : **37135116633**
Option 1 ID : **37135166529**
Option 2 ID : **37135166530**
Option 3 ID : **37135166532**
Option 4 ID : **37135166531**
Status : **Answered**
Chosen Option : **3**

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Q.16

Identify Z in the following sequence of reactions ?



Ans

✗ 1. $CH_3\text{-}CH_2\text{-}CH_2\text{-}OH$

✗ 2. $(CH_3)_2CH\text{-}CH_2\text{-}OH$

✗ 3. $CH_3\text{-}CH{=}CH_2$

✓ 4. $CH_3\text{-}\underset{\underset{OH}{|}}{CH}\text{-}CH_3$

Question Type : **MCQ**
Question ID : **37135116602**
Option 1 ID : **37135166405**
Option 2 ID : **37135166407**
Option 3 ID : **37135166408**
Option 4 ID : **37135166406**
Status : **Answered**
Chosen Option : **4**

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Q.17 Which of the following compounds is present in natural rubber as a monomer ?

Ans

1. 1, 3-Butadiene

2. 2-Chloro-1,3-butadiene

3. Styrene

4. 2-Methyl-1,3-butadiene

Question Type : **MCQ**
Question ID : **37135116650**
Option 1 ID : **37135166599**
Option 2 ID : **37135166597**
Option 3 ID : **37135166600**
Option 4 ID : **37135166598**
Status : **Answered**
Chosen Option : **2**

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Q.18

Ketoxime on reduction with sodium in ethanol forms

Ans

1. 1° amine

2. 2° amine

3. 1° and 2° amine

4. 3° amine

Question Type : **MCQ**
Question ID : **37135116639**
Option 1 ID : **37135166553**
Option 2 ID : **37135166554**
Option 3 ID : **37135166556**
Option 4 ID : **37135166555**
Status : **Answered**
Chosen Option : **1**

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Q.19

Which among the following vitamins belongs to the aliphatic series ?

Ans

1. Vitamin C

2. Vitamin A

3. Vitamin K

4. Vitamin B complex

Question Type : **MCQ**
Question ID : **37135116612**
Option 1 ID : **37135166447**
Option 2 ID : **37135166448**
Option 3 ID : **37135166446**
Option 4 ID : **37135166445**
Status : **Answered**
Chosen Option : **1**

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Q.20

Which of the following is true for the compound AB, if it is formed by transfer of an electron from A to B ?

Ans

1. B is divalent

2. A is divalent

3. AB forms electrovalent bond

4. AB forms covalent bond

Question Type : **MCQ**
Question ID : **37135116643**
Option 1 ID : **37135166570**
Option 2 ID : **37135166569**
Option 3 ID : **37135166572**
Option 4 ID : **37135166571**
Status : **Answered**
Chosen Option : **3**

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Q.21

When a system absorbs 8 kJ of heat and does 2·2 kJ of work on surrounding calculate the internal energy change ?

Ans

✗ 1. $-10{\cdot}2$ kJ

✗ 2. $10{\cdot}8$ kJ

✗ 3. $8{\cdot}0$ kJ

✓ 4. $5{\cdot}8$ kJ

Question Type : **MCQ**
Question ID : **37135116631**
Option 1 ID : **37135166523**
Option 2 ID : **37135166524**
Option 3 ID : **37135166522**
Option 4 ID : **37135166521**
Status : **Answered**
Chosen Option : **4**

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Q.22

Dry ice is an example of

Ans

✗ 1. covalent solid

✗ 2. ionic solid

✓ 3. molecular solid

✗ 4. metallic solid

Question Type : **MCQ**
Question ID : **37135116623**
Option 1 ID : **37135166491**
Option 2 ID : **37135166492**
Option 3 ID : **37135166490**
Option 4 ID : **37135166489**
Status : **Answered**
Chosen Option : **3**

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Q.23

Identify the gas used in gas chromatography ?

Ans

1. Helium

2. Argon

3. Hydrogen

4. Neon

Question Type : **MCQ**
Question ID : **37135116616**
Option 1 ID : **37135166462**
Option 2 ID : **37135166464**
Option 3 ID : **37135166461**
Option 4 ID : **37135166463**
Status : **Answered**
Chosen Option : **2**

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Q.24

In PCl_5 molecule, the angle Cl-P-Cl present in a plane is equal to

Ans

1. $180°$

2. $120°$

3. $90°$

4. $104°$

Question Type :	**MCQ**
Question ID :	**37135116637**
Option 1 ID :	**37135166548**
Option 2 ID :	**37135166547**
Option 3 ID :	**37135166545**
Option 4 ID :	**37135166546**
Status :	**Answered**
Chosen Option :	**2**

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Q.25 How many water molecules are hydrogen bonded in following molecular formula $[Cu(H_2O)_4]^{2+}\ SO_4^{2-}.H_2O$?

Ans

✗ 1. 4

✗ 2. 3

✓ 3. 1

✗ 4. 5

Question Type : **MCQ**
Question ID : **37135116649**
Option 1 ID : **37135166595**
Option 2 ID : **37135166594**
Option 3 ID : **37135166593**
Option 4 ID : **37135166596**
Status : **Answered**
Chosen Option : **3**

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Q.26

Which following method is used for refining of impure zirconium ?

Ans

1. Liquation

2. Zone refining

3. Polling

4. Van Arkel method

Question Type : **MCQ**
Question ID : **37135116630**
Option 1 ID : **37135166519**
Option 2 ID : **37135166518**
Option 3 ID : **37135166517**
Option 4 ID : **37135166520**
Status : **Answered**
Chosen Option : **4**

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Q.27

Which among the following elements has highest number of atoms in 1 g each ?
(at. no. Au = 197, Na = 23, Cu = 63·5, Fe = 56)

Ans

✗ 1. $Cu_{(s)}$

✓ 2. $Na_{(s)}$

✗ 3. $Au_{(s)}$

✗ 4. $Fe_{(s)}$

Question Type : **MCQ**
Question ID : **37135116607**
Option 1 ID : **37135166427**
Option 2 ID : **37135166426**
Option 3 ID : **37135166425**
Option 4 ID : **37135166428**
Status : **Answered**
Chosen Option : **2**

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Q.28

Which of the following is NOT used as semipermeable membrane ?

Ans

✗ 1. Cellulose nitrate

✗ 2. Copper ferrocyanide

✓ 3. Ammonium chloride

✗ 4. Cellulose

Question Type : **MCQ**
Question ID : **37135116614**
Option 1 ID : **37135166456**
Option 2 ID : **37135166453**
Option 3 ID : **37135166454**
Option 4 ID : **37135166455**
Status : **Answered**
Chosen Option : **2**

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Q.29

Which among the following elements is obtained in pure form by zone refining process ?

Ans

1. Germanium

2. Tin

3. Copper

4. Bismuth

Question Type : **MCQ**
Question ID : **37135116625**
Option 1 ID : **37135166499**
Option 2 ID : **37135166498**
Option 3 ID : **37135166497**
Option 4 ID : **37135166500**
Status : **Answered**
Chosen Option : **1**

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Q.30 Which alkane is secreted by cockroaches to attract opposite gender of it's species ?

Ans

1. Octane

2. Nonane

3. Undecane

4. Decane

Question Type : **MCQ**
Question ID : **37135116620**
Option 1 ID : **37135166477**
Option 2 ID : **37135166478**
Option 3 ID : **37135166480**
Option 4 ID : **37135166479**
Status : **Answered**
Chosen Option : **3**

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Q.31

For the following cell, standard potential of copper electrode in 0.337 V and standard cell potential is 0.463 V

$Cu|Cu^{2+}(1M)||Ag^{+}(1M)|Ag$

What is the standard potential of silver electrode?

Ans

1. $-0{\cdot}126$ V

2. $0{\cdot}800$ V

3. $-0{\cdot}463$ V

4. $0{\cdot}126$ V

Question Type : **MCQ**
Question ID : **37135116648**
Option 1 ID : **37135166592**
Option 2 ID : **37135166591**
Option 3 ID : **37135166590**
Option 4 ID : **37135166589**
Status : **Answered**
Chosen Option : **2**

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Q.32

Which of the following does NOT give yellow precipitate when reacted with $(NaOH + I_2)$mixture ?

Ans

✗ 1. Acetophenone

✓ 2. Benzaldehyde

✗ 3. Acetone

✗ 4. Acetaldehyde

Question Type : **MCQ**
Question ID : **37135116632**
Option 1 ID : **37135166528**
Option 2 ID : **37135166527**
Option 3 ID : **37135166525**
Option 4 ID : **37135166526**
Status : **Answered**
Chosen Option : **2**

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Q.33

What is the value of effective magnetic moment found in +3 oxidation state of Chromium (Z=24) ?

Ans

1. 1·73 BM

2. 3·87 BM

3. 4·90 BM

4. 2·84 BM

Question Type : **MCQ**
Question ID : **37135116617**
Option 1 ID : **37135166468**
Option 2 ID : **37135166466**
Option 3 ID : **37135166467**
Option 4 ID : **37135166465**
Status : **Answered**
Chosen Option : **2**

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Q.34 Which among the following is an alloy of antimony, tin and copper?

Ans

1. Babbitt metal

2. Spiegeleisen

3. Duralumin

4. Stainless steel

Question Type : **MCQ**
Question ID : **37135116645**
Option 1 ID : **37135166578**
Option 2 ID : **37135166580**
Option 3 ID : **37135166577**
Option 4 ID : **37135166579**
Status : **Answered**
Chosen Option : **2**

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Q.35

Identify the correct relation between depression in freezing point and freezing point of pure solvent ?

Ans

✗ 1. $T^\circ = T \times \Delta T_f$

✗ 2. $T^\circ = \Delta T_f - T$

✗ 3. $T^\circ = T - \Delta T_f$

✓ 4. $T^\circ = \Delta T_f + T$

Question Type : **MCQ**
Question ID : **37135116606**
Option 1 ID : **37135166424**
Option 2 ID : **37135166422**
Option 3 ID : **37135166423**
Option 4 ID : **37135166421**
Status : **Answered**
Chosen Option : **4**

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Q.36

What is the oxidation number of Cr in $K_2Cr_2O_7$?

Ans

1. $+2$

2. $+12$

3. -6

4. $+6$

Question Type :	**MCQ**
Question ID :	**37135116628**
Option 1 ID :	**37135166512**
Option 2 ID :	**37135166509**
Option 3 ID :	**37135166511**
Option 4 ID :	**37135166510**
Status :	**Answered**
Chosen Option :	**4**

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Q.37

What is the standard free energy change for the cell, having following cell reaction ?

$2\,Ag^{+}_{(aq.)} + Cd_{(s)} \longrightarrow 2\,Ag_{(s)} + Cd^{2+}_{(aq.)}$, E° cell $= 1{\cdot}20$ V

Ans

✔ 1. $-231{\cdot}6$ kJ

✘ 2. $-160{\cdot}8$ kJ

✘ 3. $-115{\cdot}8$ kJ

✘ 4. $-260{\cdot}8$ kJ

Question Type : **MCQ**
Question ID : **37135116622**
Option 1 ID : **37135166485**
Option 2 ID : **37135166488**
Option 3 ID : **37135166487**
Option 4 ID : **37135166486**
Status : **Answered**
Chosen Option : **1**

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Q.38

An organic compound was found to contain 40.0 % C and 6.66 % H. Find it's molecular formula (molar mass = 180)

Ans

✗ 1. $C_{22}H_{24}O_{11}$

✗ 2. $C_2H_4O_2$

✗ 3. CH_2O

✓ 4. $C_6H_{12}O_6$

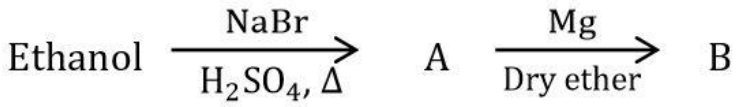
Question Type : **MCQ**
Question ID : **37135116638**
Option 1 ID : **37135166552**
Option 2 ID : **37135166550**
Option 3 ID : **37135166549**
Option 4 ID : **37135166551**
Status : **Answered**
Chosen Option : **4**

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Q.39

Identify 'B' in the following series of reactions



Ans

✔ 1. Ethyl magnesium bromide

✘ 2. Ethyl bromide

✘ 3. Sodium ethoxide

✘ 4. Ethene

Question Type : **MCQ**
Question ID : **37135116613**
Option 1 ID : **37135166451**
Option 2 ID : **37135166452**
Option 3 ID : **37135166449**
Option 4 ID : **37135166450**
Status : **Answered**
Chosen Option : **1**

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Q.40

Which of the following is dihydric phenol ?

Ans

1. Resorcinol

2. m-Cresol

3. Phloroglucinol

4. Pyrogallol

Question Type : **MCQ**
Question ID : **37135116610**
Option 1 ID : **37135166439**
Option 2 ID : **37135166440**
Option 3 ID : **37135166437**
Option 4 ID : **37135166438**
Status : **Answered**
Chosen Option : **1**

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Q.41

Which of the following is synthetic estrogen derivative ?

Ans

1. Tegamet

2. Norethindrone

3. Novestrol

4. Ranitidine

Question Type : **MCQ**
Question ID : **37135116618**
Option 1 ID : **37135166472**
Option 2 ID : **37135166469**
Option 3 ID : **37135166471**
Option 4 ID : **37135166470**
Status : **Answered**
Chosen Option : **3**

Q.42

What is the coordination number of cation in ionic compound if the type of hole occupied by cation is cubic ?

Ans

1. 3

2. 4

3. 8

4. 6

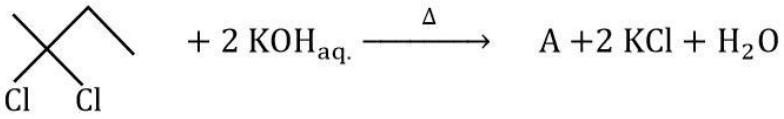
Question Type : **MCQ**
Question ID : **37135116642**
Option 1 ID : **37135166565**
Option 2 ID : **37135166566**
Option 3 ID : **37135166568**
Option 4 ID : **37135166567**
Status : **Answered**
Chosen Option : **4**

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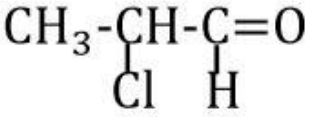
Q.43

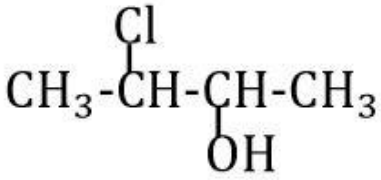
Identify the product A in the following reaction.

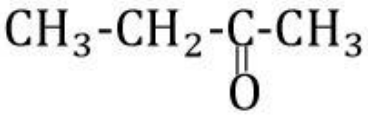


Ans

✗ 1. 

✗ 2. 

✗ 3. 

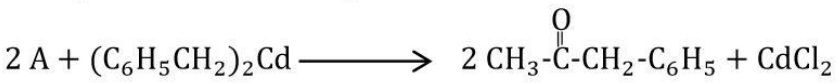
✓ 4. 

Question Type : **MCQ**
Question ID : **37135116621**
Option 1 ID : **37135166482**
Option 2 ID : **37135166484**
Option 3 ID : **37135166483**
Option 4 ID : **37135166481**
Status : **Answered**
Chosen Option : **4**

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Q.44

Identify 'A' in the following reaction



Ans

✗ 1. CH_3-Mg-Cl

✗ 2. C_6H_5- CO-Cl

✓ 3. CH_3-CO-Cl

✗ 4. C_6H_5-CH_2-Cl

Question Type : **MCQ**
Question ID : **37135116615**
Option 1 ID : **37135166458**
Option 2 ID : **37135166460**
Option 3 ID : **37135166457**
Option 4 ID : **37135166459**
Status : **Answered**
Chosen Option : **3**

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Q.45

Which of the following does NOT give carbylamine test ?

Ans

1. Ethylamine

2. Sec. butylamine

3. Isopropylamine

4. Dimethylamine

Question Type : **MCQ**
Question ID : **37135116626**
Option 1 ID : **37135166501**
Option 2 ID : **37135166503**
Option 3 ID : **37135166502**
Option 4 ID : **37135166504**
Status : **Answered**
Chosen Option : **4**

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Q.46

The coordination number of the sphere in cubic close packed (ccp) structure is

Ans

1. 6

2. 4

3. 12

4. 8

Question Type : **MCQ**
Question ID : **37135116604**
Option 1 ID : **37135166414**
Option 2 ID : **37135166413**
Option 3 ID : **37135166416**
Option 4 ID : **37135166415**
Status : **Answered**
Chosen Option : **3**

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Q.47

According to Andrews isothermals, the minimum temperature at which carbon dioxide gas obeys Boyles law is

Ans

1. 32·5 °C

2. 31·1 °C

3. 48·1 °C

4. 35·5 °C

Question Type : **MCQ**
Question ID : **37135116619**
Option 1 ID : **37135166474**
Option 2 ID : **37135166473**
Option 3 ID : **37135166476**
Option 4 ID : **37135166475**
Status : **Answered**
Chosen Option : **2**

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Q.48

Which of the following oxide of nitrogen is coloured ?

Ans

✗ 1. N_2O

✗ 2. NO

✓ 3. NO_2

✗ 4. N_2O_4

Question Type : **MCQ**
Question ID : **37135116611**
Option 1 ID : **37135166443**
Option 2 ID : **37135166441**
Option 3 ID : **37135166444**
Option 4 ID : **37135166442**
Status : **Answered**
Chosen Option : **3**

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Q.49

Identify the neohexyl chloride from the following

Ans

✔ 1. $(CH_3)_3C\text{-}CH_2\text{-}CH_2\text{-}Cl$

✘ 2. $CH_3\text{-}(CH_2)_4\text{-}CH_2\text{-}Cl$

✘ 3. $(CH_3)_2CH\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}Cl$

✘ 4. $(CH_3)_3C\text{-}\underset{\displaystyle Cl}{\underset{|}{CH}}\text{-}CH_3$

Question Type : **MCQ**
Question ID : **37135116636**
Option 1 ID : **37135166543**
Option 2 ID : **37135166541**
Option 3 ID : **37135166542**
Option 4 ID : **37135166544**
Status : **Answered**
Chosen Option : **1**

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Q.50 An ideal gas expands from $1 \times 10^{-3} m^3$ to $1 \times 10^{-2} m^3$ at 300 K against a constant external pressure of $1 \times 10^5 nm^{-2}$, work done is

Ans

✔ 1. -9×10^2 J

✘ 2. -9×10^3 J

✘ 3. -0.7×10^3 J

✘ 4. -1×10^3 J

Question Type : **MCQ**
Question ID : **37135116641**
Option 1 ID : **37135166561**
Option 2 ID : **37135166562**
Option 3 ID : **37135166564**
Option 4 ID : **37135166563**
Status : **Answered**
Chosen Option : **1**

Section : **Mathematics**

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Q.1 The derivative of f(tan x) w.r.t. g (sec$x$) at $x = \frac{\pi}{4}$, where f '(1) = 2 and $g'(\sqrt{2}) = 4$ is

Ans

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

2. 2

3. $\sqrt{2}$

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

Question Type : **MCQ**
Question ID : **37135116686**
Option 1 ID : **37135166741**
Option 2 ID : **37135166743**
Option 3 ID : **37135166742**
Option 4 ID : **37135166744**
Status : **Answered**
Chosen Option : **3**

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Q.2 In a single throw of three dice, the probability of getting a sum at least 5 is

Ans

1. $\frac{53}{54}$

2. $\frac{51}{54}$

3. $\frac{1}{54}$

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

Question Type : **MCQ**
Question ID : **37135116653**
Option 1 ID : **37135166610**
Option 2 ID : **37135166609**
Option 3 ID : **37135166611**
Option 4 ID : **37135166612**
Status : **Answered**
Chosen Option : **1**

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Q.3 Radium decomposes at a rate proportional to the amount present. If half the orignal amount disappears in 1600 yrs, then the percentage loss in 100 years is (Given $\log 2 = 0{\cdot}6912$ & $e^{-0{\cdot}04320} = 0{\cdot}9576$)

Ans

✗ 1. $3{\cdot}24\ \%$

✗ 2. $5{\cdot}24\ \%$

✗ 3. $2{\cdot}24\ \%$

✓ 4. $4{\cdot}24\ \%$

Question Type : **MCQ**
Question ID : **37135116668**
Option 1 ID : **37135166671**
Option 2 ID : **37135166669**
Option 3 ID : **37135166672**
Option 4 ID : **37135166670**
Status : **Answered**
Chosen Option : **2**

Q.4 The solution of the differential equation $\log\left(\frac{dy}{dx}\right) = 9x - 6y + 6$ is

(given that $y = 1$ when $x = 0$)

Ans

✗ 1. $3\,e^{6y} = 2\,e^{9x-6} + e^{6}$

✓ 2. $3\,e^{6y} = 2\,e^{9x+6} + e^{6}$

✗ 3. $3\,e^{6y} = 2\,e^{9x+6} - e^{6}$

✗ 4. $3\,e^{6y} = 2\,e^{9x-6} - e^{6}$

Question Type : **MCQ**
Question ID : **37135116692**
Option 1 ID : **37135166765**
Option 2 ID : **37135166767**
Option 3 ID : **37135166766**
Option 4 ID : **37135166768**
Status : **Answered**
Chosen Option : **2**

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Q.5 If $f(x) = 2x^2 + bx + c$, $f(o) = 3$ and $f(2) = 1$, then $(fof)(1) =$

Ans

✗ 1. 0

✗ 2. 2

✗ 3. 1

✓ 4. 3

Question Type : **MCQ**
Question ID : **37135116667**
Option 1 ID : **37135166666**
Option 2 ID : **37135166668**
Option 3 ID : **37135166667**
Option 4 ID : **37135166665**
Status : **Answered**
Chosen Option : **4**

Q.6 A line makes angles $\propto, \beta, \gamma$ with the co-ordinate axes, then $\cos 2\propto + \cos 2\beta + \cos 2\gamma$ is equal to

Ans

✗ 1. 2

✓ 2. -1

✗ 3. 1

✗ 4. -2

Question Type : **MCQ**
Question ID : **37135116677**
Option 1 ID : **37135166707**
Option 2 ID : **37135166706**
Option 3 ID : **37135166705**
Option 4 ID : **37135166708**
Status : **Answered**
Chosen Option : **2**

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Q.7

$$\text{If } y = tan^{-1}\left[\frac{x-\sqrt{1-x^2}}{x+\sqrt{1-x^2}}\right], \text{ then } \left(\frac{dy}{dx}\right) =$$

Ans

✗ 1. $\frac{-1}{\sqrt{1-x^2}}$

✗ 2. $\frac{-x}{\sqrt{1-x^2}}$

✓ 3. $\frac{1}{\sqrt{1-x^2}}$

✗ 4. $\frac{x}{\sqrt{1-x^2}}$

Question Type : **MCQ**
Question ID : **37135116697**
Option 1 ID : **37135166785**
Option 2 ID : **37135166787**
Option 3 ID : **37135166786**
Option 4 ID : **37135166788**
Status : **Answered**
Chosen Option : **3**

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Q.8 The number of solutions of the equation $\tan x + \sec x = 2\cos x$ lying in the interval $[0, 2\pi]$ is

Ans

1. ✗ 0
2. ✓ 2
3. ✗ 3
4. ✗ 1

Question Type : **MCQ**
Question ID : **37135116680**
Option 1 ID : **37135166717**
Option 2 ID : **37135166720**
Option 3 ID : **37135166719**
Option 4 ID : **37135166718**
Status : **Answered**
Chosen Option : **2**

Q.9 If CP and CD is a pair of semi-conjugate diameters of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, then $CP^2 + CD^2 =$

Ans

1. ✗ $\frac{a^2 + b^2}{2}$
2. ✓ $a^2 + b^2$
3. ✗ $a^2 - b^2$
4. ✗ $\frac{a^2 - b^2}{2}$

Question Type : **MCQ**
Question ID : **37135116695**
Option 1 ID : **37135166779**
Option 2 ID : **37135166778**
Option 3 ID : **37135166777**
Option 4 ID : **37135166780**
Status : **Answered**
Chosen Option : **2**

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Q.10

$$\int e^x \left(\frac{1-x}{1+x^2}\right)^2 dx =$$

Ans

1. $e^x \left(\frac{1}{1+x^2}\right) + C$

2. $e^x \left(\frac{-1}{1+x^2}\right) + C$

3. $e^x \left(\frac{2}{1+x^2}\right) + C$

4. $e^x \left(\frac{-2}{1+x^2}\right) + C$

Question Type : **MCQ**
Question ID : **37135116679**
Option 1 ID : **37135166715**
Option 2 ID : **37135166713**
Option 3 ID : **37135166716**
Option 4 ID : **37135166714**
Status : **Answered**
Chosen Option : **1**

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Q.11 $\sqrt{2+\sqrt{2+2\cos 4\theta}} =$

Ans

✔ 1. $2\cos\theta$

✘ 2. $\frac{\cos\theta}{2}$

✘ 3. $\frac{\cos\theta}{\sqrt{2}}$

✘ 4. $\sqrt{2}\cdot\cos\theta$

Question Type : **MCQ**
Question ID : **37135116688**
Option 1 ID : **37135166751**
Option 2 ID : **37135166752**
Option 3 ID : **37135166750**
Option 4 ID : **37135166749**
Status : **Answered**
Chosen Option : **1**

Q.12 The approximate value of the function $f(x) = x^3 + 5x^2 - 7x + 10$ at $x = 1{\cdot}1$ is

Ans

✘ 1. 7·6

✘ 2. 8·6

✘ 3. 6·6

✔ 4. 9·6

Question Type : **MCQ**
Question ID : **37135116670**
Option 1 ID : **37135166678**
Option 2 ID : **37135166679**
Option 3 ID : **37135166677**
Option 4 ID : **37135166680**
Status : **Answered**
Chosen Option : **4**

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Q.13 If the sum of slopes of the pair of lines given by $4x^2 + 2hxy - 7y^2 = 0$ is equal to the product of the slopes, then h is

Ans

1. -2
2. -4
3. 4
4. -6

Question Type : **MCQ**
Question ID : **37135116673**
Option 1 ID : **37135166690**
Option 2 ID : **37135166691**
Option 3 ID : **37135166692**
Option 4 ID : **37135166689**
Status : **Answered**
Chosen Option : **1**

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Q.14

If $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 2 & 1 \\ 0 & 1 \end{bmatrix}$, then $(AB)^{-1}$ is

Ans

1. $\left(\frac{1}{5}\right)\begin{bmatrix} 5 & -5 \\ 4 & -5 \end{bmatrix}$

2. $\left(\frac{1}{5}\right)\begin{bmatrix} 5 & -5 \\ -4 & 5 \end{bmatrix}$

3. $\left(\frac{1}{5}\right)\begin{bmatrix} 5 & -5 \\ 4 & 5 \end{bmatrix}$

4. $\left(\frac{1}{5}\right)\begin{bmatrix} 5 & -5 \\ -4 & -5 \end{bmatrix}$

Question Type : **MCQ**
Question ID : **37135116655**
Option 1 ID : **37135166619**
Option 2 ID : **37135166618**
Option 3 ID : **37135166617**
Option 4 ID : **37135166620**
Status : **Answered**
Chosen Option : **2**

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Q.15 If $\sin(y+z-x)$, $\sin(z+x-y)$ and $\sin(x+y-z)$ are in A.P., then

Ans

1. $2\tan y = \tan x - \tan z$
2. $\tan y = \tan x + \tan z$
3. $2\tan y = \tan x + \tan z$
4. $\tan y = \tan x - \tan z$

Question Type : **MCQ**
Question ID : **37135116658**
Option 1 ID : **37135166632**
Option 2 ID : **37135166629**
Option 3 ID : **37135166631**
Option 4 ID : **37135166630**
Status : **Answered**
Chosen Option : **3**

Q.16 For the probability distribution of X given below

$X = x$	-2	-1	0	1	2
$P(X = x)$	0·2	0·3	0·1	0·15	0·25

The variance of X is

Ans

1. 2·4257
2. 2·5427
3. 2·5742
4. 2·2475

Question Type : **MCQ**
Question ID : **37135116678**
Option 1 ID : **37135166711**
Option 2 ID : **37135166712**
Option 3 ID : **37135166709**
Option 4 ID : **37135166710**
Status : **Answered**
Chosen Option : **4**

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Q.17 If $n(X) = 700$, $n(A) = 200$, $n(B) = 300$, $n(A \cap B) = 100$, where X is universal set and A and B are subsets of X, then $n(A' \cap B') =$

Ans

✔ 1. 300

✘ 2. 400

✘ 3. 340

✘ 4. 240

Question Type : **MCQ**
Question ID : **37135116674**
Option 1 ID : **37135166694**
Option 2 ID : **37135166693**
Option 3 ID : **37135166696**
Option 4 ID : **37135166695**
Status : **Answered**
Chosen Option : **1**

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Q.18

$$\int 7^{7^{7^x}} 7^{7^x} 7^x \, dx = \quad 7^{7^{7^x}}$$

Ans

1. $7^{7^{7^x}} (\log 7)^3 + C$

2. $\frac{7^{7^{7^x}}}{(\log 7)^2} + C$

3. $\frac{7^{7^{7^x}}}{(\log 7)} + C$

4. $\frac{7^{7^{7^x}}}{(\log 7)^3} + C$

Question Type : **MCQ**
Question ID : **37135116665**
Option 1 ID : **37135166660**
Option 2 ID : **37135166658**
Option 3 ID : **37135166657**
Option 4 ID : **37135166659**
Status : **Answered**
Chosen Option : **4**

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Q.19 The optimal solution of the L.P.P. Maximize : $Z = 8x + 3y$ subject to the constraints $x + y \leq 3, 4x + y \leq 6, x \geq 0, y \geq 0$ is

Ans

1. $x = 0,\ y = 3$

2. $x = 0, y = 0$

3. $x = \frac{3}{2}, y = 0$

4. $x = 1, y = 2$

Question Type : **MCQ**
Question ID : **37135116660**
Option 1 ID : **37135166639**
Option 2 ID : **37135166637**
Option 3 ID : **37135166638**
Option 4 ID : **37135166640**
Status : **Answered**
Chosen Option : **4**

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Q.20 The distance of the point $(2, -1, 0)$ from the plane $2x + y + 2z + 8 = 0$ is

Ans

1. $\frac{17}{3}$ units

2. $\frac{13}{3}$ units

3. $\frac{7}{3}$ units

4. $\frac{11}{3}$ units

Question Type : **MCQ**
Question ID : **37135116685**
Option 1 ID : **37135166739**
Option 2 ID : **37135166738**
Option 3 ID : **37135166740**
Option 4 ID : **37135166737**
Status : **Answered**
Chosen Option : **4**

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Q.21

If the function given by $f(x) = \left(\frac{4x+1}{1-4x}\right)^{\frac{1}{x}}$ for $x \neq 0$ is continuous at $x = 0$, then the value of f(0) is

Ans

✔ 1. e^{8}

✘ 2. e^{10}

✘ 3. e^{-8}

✘ 4. e^{-10}

Question Type : **MCQ**
Question ID : **37135116689**
Option 1 ID : **37135166754**
Option 2 ID : **37135166755**
Option 3 ID : **37135166753**
Option 4 ID : **37135166756**
Status : **Answered**
Chosen Option : **1**

Q.22

If $A + B + C = 180°$, then the value of $\tan\left(\frac{A}{2}\right)\tan\left(\frac{B}{2}\right) + \tan\left(\frac{B}{2}\right)\tan\left(\frac{C}{2}\right) + \tan\left(\frac{C}{2}\right)\tan\left(\frac{A}{2}\right)$ is

Ans

✔ 1. 1

✘ 2. -1

✘ 3. -2

✘ 4. 2

Question Type : **MCQ**
Question ID : **37135116690**
Option 1 ID : **37135166758**
Option 2 ID : **37135166757**
Option 3 ID : **37135166760**
Option 4 ID : **37135166759**
Status : **Answered**
Chosen Option : **1**

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Q.23

The angle between the two lines

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

Ans

✔ 1. $\cos^{-1}\left(\frac{4}{9}\right)$

✘ 2. $\cos^{-1}\left(\frac{5}{9}\right)$

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

✘ 4. $\cos^{-1}\left(\frac{2}{9}\right)$

Question Type : **MCQ**
Question ID : **37135116693**
Option 1 ID : **37135166772**
Option 2 ID : **37135166771**
Option 3 ID : **37135166769**
Option 4 ID : **37135166770**
Status : **Answered**
Chosen Option : **1**

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Q.24

$$\int e^{\tan^{-1}x}\left(1+\frac{x}{1+x^2}\right)dx$$

Ans

1. $\left(\frac{x}{2}\right)e^{\tan^{-1}x}+c$

2. $xe^{\tan^{-1}x}+c$

3. $\left(\frac{1}{2}\right)e^{\tan^{-1}x}+c$

4. $e^{\tan^{-1}x}+c$

Question Type : **MCQ**
Question ID : **37135116672**
Option 1 ID : **37135166685**
Option 2 ID : **37135166688**
Option 3 ID : **37135166686**
Option 4 ID : **37135166687**
Status : **Answered**
Chosen Option : **2**

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Q.25 The co-ordinates of the mid-point of the chord cut off by theline $2x - 5y + 18 = 0$ by the circle $x^2 + y^2 - 6x + 2y - 54 = 0$ are

Ans

✔ 1. $(1, 4)$

✘ 2. $(2, 4)$

✘ 3. $(4, 1)$

✘ 4. $(1, 1)$

Question Type : **MCQ**
Question ID : **37135116694**
Option 1 ID : **37135166774**
Option 2 ID : **37135166773**
Option 3 ID : **37135166775**
Option 4 ID : **37135166776**
Status : **Answered**
Chosen Option : **1**

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Q.26 The differential equation of the family of curves $y = e^x (A \cos x + B \operatorname{Sin} x)$, where A and B are arbitrary constants is

Ans

1. $\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right) + 2y = 0$

2. $\frac{d^2y}{dx^2} - 2\left(\frac{dy}{dx}\right) - 2y = 0$

3. $\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right) - 2y = 0$

4. $\frac{d^2y}{dx^2} - 2\left(\frac{dy}{dx}\right) + 2y = 0$

Question Type : **MCQ**
Question ID : **37135116691**
Option 1 ID : **37135166761**
Option 2 ID : **37135166762**
Option 3 ID : **37135166764**
Option 4 ID : **37135166763**
Status : **Answered**
Chosen Option : **4**

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Q.27 The area of the region bounded by the curve $y = x^2 + 1$, the lines $x = 1$, $x = 2$ and the x - axis is

Ans

1. $\frac{13}{3}$ sq. units

2. $\frac{10}{3}$ sq. units

3. $\frac{16}{3}$ sq. units

4. $\frac{19}{3}$ sq. units

Question Type : **MCQ**
Question ID : **37135116656**
Option 1 ID : **37135166622**
Option 2 ID : **37135166621**
Option 3 ID : **37135166623**
Option 4 ID : **37135166624**
Status : **Answered**
Chosen Option : **2**

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Q.28 If the tangent to the curve given by $x = t^2 - 1$ and $y = t^2 - t$ is parallel to X - axis, then the value of t is

Ans

✗ 1. $\frac{-1}{\sqrt{3}}$

✗ 2. 0

✗ 3. $\frac{1}{\sqrt{3}}$

✓ 4. $\frac{1}{2}$

Question Type : **MCQ**
Question ID : **37135116652**
Option 1 ID : **37135166606**
Option 2 ID : **37135166607**
Option 3 ID : **37135166605**
Option 4 ID : **37135166608**
Status : **Answered**
Chosen Option : **4**

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Q.29 If f and g are differentiable functions satisfying $g'(a) = 2$, $g(a) = b$ and $fog = I$, where I is an identity function, then $f'(b)$ is equal to

Ans

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

Question Type : **MCQ**
Question ID : **37135116675**
Option 1 ID : **37135166699**
Option 2 ID : **37135166700**
Option 3 ID : **37135166698**
Option 4 ID : **37135166697**
Status : **Answered**
Chosen Option : **3**

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Q.30

If the p.m.f. is given by $P(X) = k\binom{4}{x}$, for $x = 0, 1, 2, 3, 4, k > 0$
$= 0$, otherwise

then the value of k is

Ans

1. $\frac{3}{16}$

2. $\frac{7}{16}$

3. $\frac{1}{16}$

4. $\frac{5}{16}$

Question Type : **MCQ**
Question ID : **37135116676**
Option 1 ID : **37135166702**
Option 2 ID : **37135166704**
Option 3 ID : **37135166701**
Option 4 ID : **37135166703**
Status : **Answered**
Chosen Option : **3**

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Q.31 If the A.M. and G.M. of the roots of a quadratic equation in x are p and q respectively, then its equation is

Ans

1. $x^2 + 2px + q^2 = 0$
2. $x^2 + px + q^2 = 0$
3. $x^2 - px + q^2 = 0$
4. $x^2 - 2px + q^2 = 0$

Question Type : **MCQ**
Question ID : **37135116657**
Option 1 ID : **37135166626**
Option 2 ID : **37135166628**
Option 3 ID : **37135166627**
Option 4 ID : **37135166625**
Status : **Answered**
Chosen Option : **4**

Q.32 If $A = \begin{bmatrix} 1 & 0 \\ -1 & 7 \end{bmatrix}$, $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $A^2 = 8A + kI$, then the value of K is

Ans

1. $\frac{1}{7}$
2. $\frac{-1}{7}$
3. -7
4. 7

Question Type : **MCQ**
Question ID : **37135116682**
Option 1 ID : **37135166727**
Option 2 ID : **37135166728**
Option 3 ID : **37135166726**
Option 4 ID : **37135166725**
Status : **Answered**
Chosen Option : **3**

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Q.33 If $2f(x) = f'(x)$ and $f(0) = 3$, then the value of $f(2)$ is

Ans

✗ 1. $3e^2$

✗ 2. $2e^3$

✗ 3. $4e^3$

✓ 4. $3e^4$

Question Type : **MCQ**
Question ID : **37135116681**
Option 1 ID : **37135166724**
Option 2 ID : **37135166723**
Option 3 ID : **37135166721**
Option 4 ID : **37135166722**
Status : **Answered**
Chosen Option : **4**

Q.34 The joint equation of the lines through the origin trisecting angles in first and third equadrant is

Ans

✗ 1. $\sqrt{3}(x^2 - y^2) + 4xy = 0$

✓ 2. $\sqrt{3}(x^2 + y^2) - 4xy = 0$

✗ 3. $\sqrt{3}(x^2 + y^2) + 4xy = 0$

✗ 4. $\sqrt{3}(x^2 - y^2) - 4xy = 0$

Question Type : **MCQ**
Question ID : **37135116664**
Option 1 ID : **37135166654**
Option 2 ID : **37135166656**
Option 3 ID : **37135166655**
Option 4 ID : **37135166653**
Status : **Answered**
Chosen Option : **2**

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Q.35

$$\int_0^{\frac{\pi}{2}} \sin^2 x \, dx =$$

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116661**
Option 1 ID : **37135166641**
Option 2 ID : **37135166643**
Option 3 ID : **37135166644**
Option 4 ID : **37135166642**
Status : **Answered**
Chosen Option : **4**

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Q.36 If $\sin x + \sin^2 x = 1$, then $\cos^8 x + 2\cos^6 x + \cos^4 x$ is

Ans

✗ 1. 3

✗ 2. 2

✓ 3. 1

✗ 4. 4

Question Type : **MCQ**
Question ID : **37135116651**
Option 1 ID : **37135166602**
Option 2 ID : **37135166603**
Option 3 ID : **37135166604**
Option 4 ID : **37135166601**
Status : **Answered**
Chosen Option : **3**

Q.37 The perimeter of the triangle whose vertices have the position vectos $\hat{i}+\hat{j}+\hat{k}$, $5\hat{i}+3\hat{j}-3\hat{k}$ and $2\hat{i}+5\hat{j}+9\hat{k}$ is

Ans

✗ 1. $(\sqrt{15}-\sqrt{157})$ units

✓ 2. $(15+\sqrt{157})$ units

✗ 3. $(15-\sqrt{157})$ units

✗ 4. $(\sqrt{15}+\sqrt{157})$ units

Question Type : **MCQ**
Question ID : **37135116671**
Option 1 ID : **37135166684**
Option 2 ID : **37135166681**
Option 3 ID : **37135166682**
Option 4 ID : **37135166683**
Status : **Answered**
Chosen Option : **2**

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Q.38

$$\int_{-4}^{4} log\ \left(\frac{8-x}{8+x}\right) dx =$$

Ans

✗ 1. -4

✗ 2. 8

✗ 3. 4

✓ 4. 0

Question Type : **MCQ**
Question ID : **37135116700**
Option 1 ID : **37135166798**
Option 2 ID : **37135166799**
Option 3 ID : **37135166797**
Option 4 ID : **37135166800**
Status : **Answered**
Chosen Option : **4**

Q.39 If $\bar{a} = 2\hat{i} - \hat{j} + \hat{k}$, $\bar{b} = \hat{i} + 2\hat{j} - 3\hat{k}$ and $\bar{c} = 3\hat{i} + \lambda\hat{j} + 5\hat{k}$ are coplanar, then λ is the root of the equation

Ans

✗ 1. $x^2 + 2x = 6$

✗ 2. $x^2 + 2x = 4$

✗ 3. $x^2 + 3x = 6$

✓ 4. $x^2 + 3x = 4$

Question Type : **MCQ**
Question ID : **37135116662**
Option 1 ID : **37135166646**
Option 2 ID : **37135166648**
Option 3 ID : **37135166647**
Option 4 ID : **37135166645**
Status : **Answered**
Chosen Option : **4**

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Q.40

Amongs the given statements below

(a) $\sim p \vee (\sim p \vee \sim q)$

(b) $\sim q \wedge (\sim p \vee \sim q)$

(c) $(\sim p \vee \sim q) \wedge (p \vee \sim q)$

(d) $(\sim p \vee \sim q) \vee (p \vee \sim q)$

_____ is a tautology

Ans

✗ 1. (b)

✗ 2. (a)

✗ 3. (c)

✓ 4. (d)

Question Type : **MCQ**
Question ID : **37135116696**
Option 1 ID : **37135166782**
Option 2 ID : **37135166781**
Option 3 ID : **37135166783**
Option 4 ID : **37135166784**
Status : **Answered**
Chosen Option : **4**

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Q.41 If a fair coin is tossed 8 times, then the probability that it shows heads more than tails is

Ans

✗ 1. $\frac{91}{256}$

✗ 2. $\frac{97}{256}$

✓ 3. $\frac{93}{256}$

✗ 4. $\frac{95}{256}$

Question Type : **MCQ**
Question ID : **37135116684**
Option 1 ID : **37135166733**
Option 2 ID : **37135166736**
Option 3 ID : **37135166734**
Option 4 ID : **37135166735**
Status : **Answered**
Chosen Option : **3**

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Q.42 The distance of the point (7, 5, 2) from the plane $3x + 4y + z - 8 = 0$ measured parallel to the line $\frac{x-1}{3} = \frac{y-2}{6} = \frac{z+1}{2}$ is

Ans

✗ 1. $\sqrt{74}$ units

✗ 2. $\sqrt{47}$ units

✗ 3. 6 units

✓ 4. 7 units

Question Type : **MCQ**
Question ID : **37135116669**
Option 1 ID : **37135166676**
Option 2 ID : **37135166673**
Option 3 ID : **37135166674**
Option 4 ID : **37135166675**
Status : **Answered**
Chosen Option : **1**

Q.43 The acute angle between the lines given by $y - \sqrt{3}x + 1 = 0$ and $\sqrt{3}y - x + 7 = 0$ is

Ans

✗ 1. 75°

✗ 2. 60°

✗ 3. 45°

✓ 4. 30°

Question Type : **MCQ**
Question ID : **37135116698**
Option 1 ID : **37135166792**
Option 2 ID : **37135166791**
Option 3 ID : **37135166790**
Option 4 ID : **37135166789**
Status : **Answered**
Chosen Option : **4**

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Q.44

$$\int_0^5 \frac{dx}{x^2+2x+10}$$

Ans

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

2. $\frac{\pi}{12}$

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

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

Question Type : **MCQ**
Question ID : **37135116654**
Option 1 ID : **37135166615**
Option 2 ID : **37135166616**
Option 3 ID : **37135166613**
Option 4 ID : **37135166614**
Status : **Answered**
Chosen Option : **3**

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Q.45 The volume of a tetrahedron whose vertices are $A \equiv (-1,2,3)$, $B \equiv (3,-2,1)$, $C \equiv (2,1,3)$ and $D \equiv (-1,-2,4)$ is

Ans

✗ 1. $\frac{14}{3}$ cu. units

✓ 2. $\frac{16}{3}$ cu. units

✗ 3. $\frac{17}{3}$ cu. units

✗ 4. $\frac{15}{3}$ cu. units

Question Type : **MCQ**
Question ID : **37135116687**
Option 1 ID : **37135166745**
Option 2 ID : **37135166747**
Option 3 ID : **37135166748**
Option 4 ID : **37135166746**
Status : **Answered**
Chosen Option : **2**

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Q.46 If rectangles are inscribed in a circle of radius r units. Then the dimensions of the rectangle which has maximum area are

Ans

1. $2\,r$ units , r units,

2. $2\,r$ units , $\sqrt{2}\,r$ units,

3. r units , $\sqrt{2}\,r$ units,

4. $\sqrt{2}\,r$ units , $\sqrt{2}\,r$ units,

Question Type : **MCQ**
Question ID : **37135116663**
Option 1 ID : **37135166652**
Option 2 ID : **37135166651**
Option 3 ID : **37135166650**
Option 4 ID : **37135166649**
Status : **Answered**
Chosen Option : **4**

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Q.47 If a point P on the line segment joining the points $(3, 5, -1)$ and $(6, 3, -2)$ has its y - coordinate 2, then its z - coordinate is

Ans

1. $\frac{2}{15}$
2. $\frac{17}{3}$
3. $\frac{15}{2}$
4. $\frac{3}{17}$

Question Type : **MCQ**
Question ID : **37135116699**
Option 1 ID : **37135166793**
Option 2 ID : **37135166794**
Option 3 ID : **37135166795**
Option 4 ID : **37135166796**
Status : **Answered**
Chosen Option : **3**

Q.48 The entries in the last column of the truth table for $\sim(p \wedge q)$ are

Ans

1. F F T T
2. T F F F
3. F T T T
4. T T F F

Question Type : **MCQ**
Question ID : **37135116666**
Option 1 ID : **37135166664**
Option 2 ID : **37135166662**
Option 3 ID : **37135166661**
Option 4 ID : **37135166663**
Status : **Answered**
Chosen Option : **3**

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Q.49 If A, B, C are angles of a Δ ABC, then tan 2A + tan 2 B + tan 2C =

Ans

1. tan 2A tan 3B tan 2C

2. tan 2A tan 2B tan 2C

3. tan A tan B tan C

4. tan 3A tan 2B tan 2C

Question Type : **MCQ**
Question ID : **37135116683**
Option 1 ID : **37135166732**
Option 2 ID : **37135166730**
Option 3 ID : **37135166729**
Option 4 ID : **37135166731**
Status : **Answered**
Chosen Option : **2**

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Q.50 The growth of population is proportional to the number present. If the population of a colony doubles is 50 years, then the population will become triple in _____ years

Ans

1. $5\left(\frac{\ell og2}{\ell og3}\right)$ yrs

2. $50\left(\frac{\ell og3}{\ell og2}\right)$ yrs

3. $5\left(\frac{\ell og3}{\ell og2}\right)$ yrs

4. $50\left(\frac{\ell og2}{\ell og3}\right)$ yrs

Question Type : **MCQ**
Question ID : **37135116659**
Option 1 ID : **37135166636**
Option 2 ID : **37135166633**
Option 3 ID : **37135166635**
Option 4 ID : **37135166634**
Status : **Answered**
Chosen Option : **2**

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