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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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Q.1

An electron moves in a circular orbit with uniform speed 'v'. It produces a magnetic field 'B' at the centre of the circle. The radius of the circle is

[μ_0 = permeability of free space, e = electronic charge]

Ans

✗ 1. $\left(\frac{\mu_0 ev}{B}\right)^{1/2}$

✗ 2. $\frac{\mu_0 eB}{4\pi v}$

✓ 3. $\left(\frac{\mu_0 ev}{4\pi B}\right)^{1/2}$

✗ 4. $\frac{\mu_0 ev}{4\pi B}$

Q.7

Question Type : **MCQ**
Question ID : **37135117182**
Option 1 ID : **37135168728**
Option 2 ID : **37135168726**
Option 3 ID : **37135168727**
Option 4 ID : **37135168725**
Status : **Answered**
Chosen Option : **2**

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Q.2 Two circular loops A and B of radii 'R' and 'NR' respectively are made from a uniform wire. Moment of inertia of B about its axis is 3 times that of A about its axis. The value of N is

Ans

1. $[5]^{\frac{1}{3}}$

2. $[3]^{\frac{1}{3}}$

3. $[4]^{\frac{1}{3}}$

4. $[2]^{\frac{1}{3}}$

3

Question Type : **MCQ**
Question ID : **37135117159**
Option 1 ID : **37135168636**
Option 2 ID : **37135168635**
Option 3 ID : **37135168634**
Option 4 ID : **37135168633**
Status : **Answered**
Chosen Option : **3**

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Q.3 A uniform metal wire has length 'L', mass 'M' and density 'ϱ'. It is under tension 'T' and 'v' is the speed of transverse wave along the wire. The area of cross-section of the wire is

Ans

1. $\frac{v^2\varrho}{T}$

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

3. $T^2\varrho v$

4. $Tv^2\varrho$

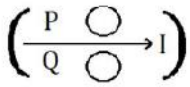
Question Type : **MCQ**
Question ID : **37135117165**
Option 1 ID : **37135168657**
Option 2 ID : **37135168660**
Option 3 ID : **37135168659**
Option 4 ID : **37135168658**
Status : **Answered**
Chosen Option : **1**

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Q.4

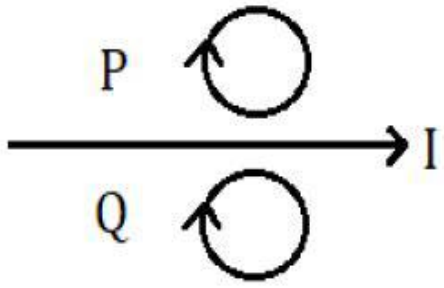
Metal rings 'P' and 'Q' are lying in the same plane where current 'I' is increasing steadily. The induced current in metal rings is shown correctly in figure



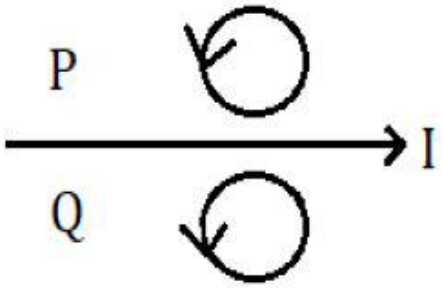
Ans

16

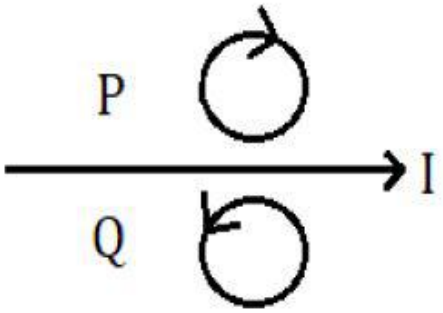
✗ 1.



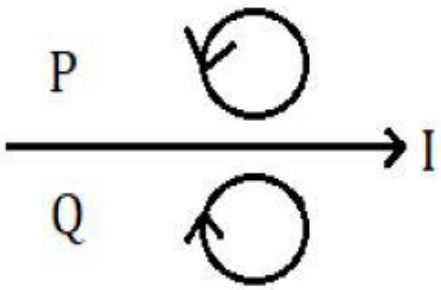
✗ 2.



✓ 3.



✗ 4.



Question Type : **MCQ**
Question ID : **37135117166**
Option 1 ID : **37135168661**
Option 2 ID : **37135168664**

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Option 3 ID : **37135168662**
Option 4 ID : **37135168663**
Status : **Answered**
Chosen Option : **2**

Q.5 The fundamental frequency of a closed pipe is 400 Hz. If $^{1}/_{3}^{rd}$ pipe is filled with water, the frequency of 2nd harmonic of the pipe will be (Neglect end correction)

Ans

✗ 1. 600 Hz

✓ 2. 1800 Hz

✗ 3. 1200 Hz

✗ 4. 300 Hz

Question Type : **MCQ**
Question ID : **37135117196**
Option 1 ID : **37135168783**
Option 2 ID : **37135168781**
Option 3 ID : **37135168782**
Option 4 ID : **37135168784**
Status : **Answered**
Chosen Option : **2**

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Q.6

Two capacitors of capacities 2 μF and 4 μF are connected in parallel. A third capacitor of 6 μF capacity is connected in series with this combination. A battery of 12 V is connected across this combination. The charge on 2 μF capacitor is

Ans

✔ 1. 12 μC

✗ 2. 16 μC

✗ 3. 14 μC

✗ 4. 11 μC

12

Question Type : **MCQ**
Question ID : **37135117174**
Option 1 ID : **37135168695**
Option 2 ID : **37135168693**
Option 3 ID : **37135168694**
Option 4 ID : **37135168696**
Status : **Answered**
Chosen Option : **2**

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Q.7 The compressibility of water is 5×10^{-10} m^2/N. Pressure of 15×10^6 Pa is applied on 100 ml volume of water. The change in the volume of water is

Ans

✗ 1. 0·75 ml increase.

✗ 2. 1·50 ml increase.

✓ 3. 0·75 ml decrease.

✗ 4. zero.

Question Type : **MCQ**
Question ID : **37135117155**
Option 1 ID : **37135168619**
Option 2 ID : **37135168620**
Option 3 ID : **37135168618**
Option 4 ID : **37135168617**
Status : **Answered**
Chosen Option : **3**

Q.8 Let $x = \pi R\left(\frac{P^2-Q^2}{2}\right)$, where P, Q and R are lengths. The physical quantity 'x' is

Ans

✓ 1. volume

✗ 2. area

✗ 3. velocity

✗ 4. length

Question Type : **MCQ**
Question ID : **37135117152**
Option 1 ID : **37135168605**
Option 2 ID : **37135168606**
Option 3 ID : **37135168608**
Option 4 ID : **37135168607**
Status : **Answered**
Chosen Option : **1**

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Q.9 A milliammeter of resistance 40Ω has a range 0-30 mA. What will be the resistance used in series to convert it into voltmeter of range 0-15 V ?

Ans

1. 640 Ω

2. 920 Ω

3. 560 Ω

4. 460 Ω

14

Question Type : **MCQ**
Question ID : **37135117168**
Option 1 ID : **37135168669**
Option 2 ID : **37135168672**
Option 3 ID : **37135168670**
Option 4 ID : **37135168671**
Status : **Answered**
Chosen Option : **3**

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Q.10

Two bodies 'A' and 'B' of equal mass are suspended from two separate massless springs of force constant 'k_1' and 'k_2' respectively. The bodies oscillate vertically such that their maximum velocities are equal. The ratio of the amplitudes of body A to that of body B is

Ans

✔ 1. $\sqrt{\frac{k_2}{k_1}}$

✘ 2. $\frac{k_1}{k_2}$

✘ 3. $\sqrt{\frac{k_1}{k_2}}$

✘ 4. $\frac{k_2}{k_1}$

Question Type : **MCQ**
Question ID : **37135117194**
Option 1 ID : **37135168775**
Option 2 ID : **37135168773**
Option 3 ID : **37135168774**
Option 4 ID : **37135168776**
Status : **Answered**
Chosen Option : **3**

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Q.11 Three points masses, each of mass 'm' are placed at the corners of an equilateral triangle of side 'ℓ'. The moment of inertia of the system about an axis passing through one of the vertices and parallel to the side joining other two vertices, will be

Ans

✔ 1. $\frac{3}{2}m\ell^2$

3

✘ 2. $\frac{3}{4}m\ell^2$

✘ 3. $\frac{1}{2}m\ell^2$

✘ 4. $\frac{1}{4}m\ell^2$

Question Type : **MCQ**
Question ID : **37135117198**
Option 1 ID : **37135168790**
Option 2 ID : **37135168789**
Option 3 ID : **37135168791**
Option 4 ID : **37135168792**
Status : **Answered**
Chosen Option : **3**

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Q.12

Two spherical rain drops reach the surface of the earth with terminal velocities having ratio 16:9. The ratio of their surface area is

Ans

1. 4 : 3

2. 64 : 27

3. 16 : 9

4. 9 : 16

24

Question Type : **MCQ**
Question ID : **37135117187**
Option 1 ID : **37135168745**
Option 2 ID : **37135168746**
Option 3 ID : **37135168747**
Option 4 ID : **37135168748**
Status : **Answered**
Chosen Option : **1**

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Q.13

van de Graaff generator produces

Ans

✗ 1.

low voltage and low current.

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✗ 2.

high voltage and high current.

✓ 3.

high voltage and low current.

✗ 4.

low voltage and high current.

Question Type : **MCQ**
Question ID : **37135117151**
Option 1 ID : **37135168603**
Option 2 ID : **37135168601**
Option 3 ID : **37135168602**
Option 4 ID : **37135168604**
Status : **Answered**
Chosen Option : **3**

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Q.14 A metal rod has length, cross-sectional area and Young's modulus as 'L', 'A' and 'Y' respectively. If the elongation in the rod produced is 'ℓ' then work done is proportional to

Ans

1. ℓ

2. ℓ^4

3. ℓ^2

4. ℓ^3

Question Type : **MCQ**
Question ID : **37135117185**
Option 1 ID : **37135168737**
Option 2 ID : **37135168740**
Option 3 ID : **37135168738**
Option 4 ID : **37135168739**
Status : **Answered**
Chosen Option : **3**

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Q.15 By increasing the aperture of the objective lens, wavelength of light, focal length of the objective lens and the resolving power of an astronomical telescope respectively

Ans

✗ 1. is not affected, increases, decreases.

✓ 2. increases, decreases, is not affected.

✗ 3. decreases, increases, is not affected.

✗ 4. is not affected, decreases, increases.

Question Type : **MCQ**
Question ID : **37135117188**
Option 1 ID : **37135168751**
Option 2 ID : **37135168749**
Option 3 ID : **37135168750**
Option 4 ID : **37135168752**
Status : **Answered**
Chosen Option : **1**

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Q.16 If the maximum kinetic energy of emitted electrons in photoelectric effect is $3{\cdot}2 \times 10^{-19}$ J and the work function for metal is $6{\cdot}63 \times 10^{-19}$ J, then stopping potential and threshold wavelength respectively are

[Planck's constant $h = 6{\cdot}63 \times 10^{-34}$ J.s]

[Velocity of light $c = 3 \times 10^{8} \frac{m}{s}$]

[charge on electron $= 1{\cdot}6 \times 10^{-19}$ C]

17

Ans

✗ 1. 3V, 4000Å

✗ 2. 4V, 6000Å

✗ 3. 1V, 1000Å

✓ 4. 2V, 3000Å

Question Type : **MCQ**
Question ID : **37135117158**
Option 1 ID : **37135168630**
Option 2 ID : **37135168629**
Option 3 ID : **37135168632**
Option 4 ID : **37135168631**
Status : **Answered**
Chosen Option : **4**

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Q.17

For a paramagnetic substance, the magnetic susceptibility is

Ans

1. small and negative

2. large and negative

3. small and positive

4. large and positive

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Question Type : **MCQ**
Question ID : **37135117199**
Option 1 ID : **37135168793**
Option 2 ID : **37135168796**
Option 3 ID : **37135168794**
Option 4 ID : **37135168795**
Status : **Answered**
Chosen Option : **3**

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Q.18 In an intrinsic semiconductor, at an ordinary temperature, the correct relation between the number of electrons 'n_e' and number of holes 'n_h' is

Ans

1. $n_e > n_h$

2. $n_e = n_h$

3. $n_e = n_h = 0$

4. $n_e < n_h$

19

Question Type : **MCQ**
Question ID : **37135117180**
Option 1 ID : **37135168717**
Option 2 ID : **37135168720**
Option 3 ID : **37135168719**
Option 4 ID : **37135168718**
Status : **Answered**
Chosen Option : **3**

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Q.19 A ray of light is incident at an angle 'i' on one face of a thin angled prism. The ray emerges normally from the other face. Refractive index of the glass prism is 'n' and angle of prism is 'A'. The value of 'i' is

Ans

1. An^2.

2. A^2n.

3. An.

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

25

Question Type : **MCQ**
Question ID : **37135117197**
Option 1 ID : **37135168785**
Option 2 ID : **37135168787**
Option 3 ID : **37135168788**
Option 4 ID : **37135168786**
Status : **Answered**
Chosen Option : **4**

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Q.20 A body of mass 64 g is made to oscillate turn by turn on two different springs A and B. Spring A and B has force constant $4\,\frac{N}{m}$ and $16\,\frac{N}{m}$ respectively. If T_1 and T_2 are period of oscillations of springs A and B respectively then $\frac{T_1+T_2}{T_1-T_2}$ will be

Ans

1. 1:3

2. 3:1

3. 1:2

4. 2:1

Question Type : **MCQ**
Question ID : **37135117173**
Option 1 ID : **37135168692**
Option 2 ID : **37135168691**
Option 3 ID : **37135168689**
Option 4 ID : **37135168690**
Status : **Answered**
Chosen Option : **3**

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Q.21 A child starts running from rest along a circular track of radius 'r' with constant tangential acceleration 'a'. After time 't' he feels that slipping of shoes on the ground has started. The coefficient of friction between shoes and the ground is [g = acceleration due to gravity]

Ans

1. $\frac{[a^2t^2+a^4r^4]}{rg}$

2. $\frac{[a^4t^4+a^2r^2]}{rg}$

3. $\frac{[a^4t^4+a^2r^2]^{\frac{1}{2}}}{gr}$

4. $\frac{[a^4t^4-a^2r^2]^{\frac{1}{2}}}{rg}$

24

Question Type : **MCQ**
Question ID : **37135117191**
Option 1 ID : **37135168762**
Option 2 ID : **37135168761**
Option 3 ID : **37135168763**
Option 4 ID : **37135168764**
Status : **Answered**
Chosen Option : **2**

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Q.22 A steel wire of length 'ℓ' has a magnetic moment 'M'. It is then bent into a semi-circular arc. The new magnetic moment is

Ans

✔ 1. $2M / \pi$

✗ 2. M

✗ 3. $M \times \ell$

✗ 4. M / ℓ

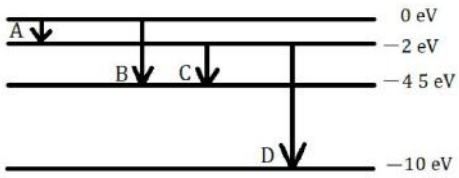
28

Question Type : **MCQ**
Question ID : **37135117162**
Option 1 ID : **37135168646**
Option 2 ID : **37135168645**
Option 3 ID : **37135168648**
Option 4 ID : **37135168647**
Status : **Answered**
Chosen Option : **1**

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Q.23 The energy levels with transitions for the atom are shown. The transitions corresponding to emission of radiation of maximum and minimum wavelength are respectively



18

Ans

✔ 1. A, D

✘ 2. B, C

✘ 3. C, D

✘ 4. A, C

Question Type : **MCQ**
Question ID : **37135117154**
Option 1 ID : **37135168615**
Option 2 ID : **37135168616**
Option 3 ID : **37135168614**
Option 4 ID : **37135168613**
Status : **Answered**
Chosen Option : **3**

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Q.24 In a system of two particles of masses 'm_1' and 'm_2', the first particle is moved by a distance 'd' towards the centre of mass. To keep the centre of mass unchanged, the second particle will have to be moved by a distance

Ans

1. $\frac{m_1}{m_2}$ d, towards the centre of mass.

2. $\frac{m_2}{m_1}$ d, away from the centre of mass.

3. $\frac{m_2}{m_1}$ d, towards the centre of mass.

4. $\frac{m_1}{m_2}$ d, away from the centre of mass.

23

Question Type : **MCQ**
Question ID : **37135117172**
Option 1 ID : **37135168687**
Option 2 ID : **37135168686**
Option 3 ID : **37135168685**
Option 4 ID : **37135168688**
Status : **Answered**
Chosen Option : **2**

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Q.25

An object is clearly seen through an astronomical telescope of length 50 cm. The focal lengths of its objective and eyepiece respectively, can be

Ans

1. 5 cm and 45 cm

2. 45 cm and −5 cm

3. −45 cm and −5 cm

4. 45 cm and 5 cm

26

Question Type : **MCQ**
Question ID : **37135117192**
Option 1 ID : **37135168768**
Option 2 ID : **37135168765**
Option 3 ID : **37135168766**
Option 4 ID : **37135168767**
Status : **Answered**
Chosen Option : **4**

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Q.26 'N' number of balls of mass 'm' kg moving along positive direction of x – axis, strike a wall per second and return elastically. The velocity of each ball is 'u' m/s. The force exerted on the wall by the balls in newton, is

Ans

1. mNu

2. 0

3. $2mNu$

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

23

Question Type : **MCQ**
Question ID : **37135117177**
Option 1 ID : **37135168707**
Option 2 ID : **37135168705**
Option 3 ID : **37135168708**
Option 4 ID : **37135168706**
Status : **Answered**
Chosen Option : **2**

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Q.27

What is the angle between resultant of $\vec{A} + \vec{B}$ and $\vec{A} \times \vec{B}$?

Ans

1. π rad

2. $0°$

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

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

22

Question Type : **MCQ**
Question ID : **37135117157**
Option 1 ID : **37135168628**
Option 2 ID : **37135168625**
Option 3 ID : **37135168627**
Option 4 ID : **37135168626**
Status : **Answered**
Chosen Option : **3**

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Q.28 The angle subtended by the vector $\vec{A} = 4\hat{i} + 3\hat{j} + 12\hat{k}$ with the x - axis is

Ans

1. $\sin^{-1}\left(\frac{4}{13}\right)$

2. $\cos^{-1}\left(\frac{3}{13}\right)$

3. $\cos^{-1}\left(\frac{4}{13}\right)$

4. $\sin^{-1}\left(\frac{3}{13}\right)$

22

Question Type : **MCQ**
Question ID : **37135117167**
Option 1 ID : **37135168666**
Option 2 ID : **37135168668**
Option 3 ID : **37135168667**
Option 4 ID : **37135168665**
Status : **Answered**
Chosen Option : **3**

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Q.29

Earth has mass 'M_1' and Radius 'R_1'. Moon has mass 'M_2' and radius 'R_2'. Distance between their centres is 'r'. A body of mass 'M' is placed on the line joining them at a distance $\frac{r}{3}$ from centre of the earth. To project the mass 'M' to escape to infinity, the minimum speed required is

Ans

1. $\left[\frac{6G}{r}\left(M_1-\frac{M_2}{2}\right)\right]^{\frac{1}{2}}$

2. $\left[\frac{6G}{r}\left(M_1+\frac{M_2}{2}\right)\right]^{\frac{1}{2}}$

3. $\left[\frac{3G}{r}\left(M_1+\frac{M_2}{2}\right)\right]^{\frac{1}{2}}$

4. $\left[\frac{3G}{r}\left(M_1-\frac{M_2}{2}\right)\right]^{\frac{1}{2}}$

2

Question Type : **MCQ**
Question ID : **37135117170**
Option 1 ID : **37135168680**
Option 2 ID : **37135168678**
Option 3 ID : **37135168677**
Option 4 ID : **37135168679**
Status : **Answered**
Chosen Option : **2**

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Q.30

A body is moving along a circular track of radius 100 m with velocity 20 m/s. Its tangential acceleration is 3 m/s², then its resultant acceleration will be

Ans

1. $3\ m/s^2$

2. $5\ m/s^2$

3. $4\ m/s^2$

4. $2\ m/s^2$

Question Type : **MCQ**
Question ID : **37135117161**
Option 1 ID : **37135168642**
Option 2 ID : **37135168644**
Option 3 ID : **37135168643**
Option 4 ID : **37135168641**
Status : **Answered**
Chosen Option : **2**

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Q.31 The Brewster's angle for the glass-air interface is (54·74)°. If a ray of light passing from air to glass strikes at an angle of incidence 45°, then the angle of refraction is

$\left[\tan(54 \cdot 74)^\circ = \sqrt{2},\quad \sin 45^\circ = \frac{1}{\sqrt{2}}\right]$

Ans

✔ 1. $\sin^{-1}(0{\cdot}5)$

✘ 2. $\sin^{-1}(1)$

✘ 3. $\sin^{-1}(\sqrt{2})$

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

10

Question Type : **MCQ**
Question ID : **37135117195**
Option 1 ID : **37135168778**
Option 2 ID : **37135168780**
Option 3 ID : **37135168777**
Option 4 ID : **37135168779**
Status : **Answered**
Chosen Option : **1**

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Q.32 A tuning fork 'A' produces 5 beats per second with a tuning fork of frequency 480 Hz. When a little wax is stuck to a prong of fork A, the number of beats heard per second becomes 2. What is the frequency of tuning fork A before the wax is stuck to it?

Ans

✔ 1. 485 Hz

✘ 2. 478 Hz

✘ 3. 475 Hz

✘ 4. 482 Hz

7

Question Type : **MCQ**
Question ID : **37135117181**
Option 1 ID : **37135168724**
Option 2 ID : **37135168722**
Option 3 ID : **37135168721**
Option 4 ID : **37135168723**
Status : **Answered**
Chosen Option : **1**

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Q.33 A transistor having $\alpha = 0{\cdot}8$ is connected in common emitter configuration. When the base current changes by 6 mA, the change in collector current is

Ans

✗ 1. 12 mA

✗ 2. 1·5 mA

✓ 3. 24 mA

✗ 4. 0·66 mA

19

Question Type : **MCQ**
Question ID : **37135117164**
Option 1 ID : **37135168655**
Option 2 ID : **37135168654**
Option 3 ID : **37135168656**
Option 4 ID : **37135168653**
Status : **Answered**
Chosen Option : **2**

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Q.34 A 10 m long wire of resistance 20 Ω is connected in series with a battery of e.m.f. 3 volt and a resistance of 10 Ω. The potential gradient along the wire in volt/meter is

Ans

1. 0·02
2. 1·2
3. 0·10
4. 0·20

13

Question Type : **MCQ**
Question ID : **37135117193**
Option 1 ID : **37135168769**
Option 2 ID : **37135168772**
Option 3 ID : **37135168770**
Option 4 ID : **37135168771**
Status : **Answered**
Chosen Option : **4**

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Q.35 Water rises upto a height 'h' in a capillary tube on the surface of the earth. The value of 'h' will increase if the experimental setup is kept in [g = acceleration due to gravity]

Ans

✗ 1.

a lift going upward with a certain acceleration.

✓ 2.

a lift going down with acceleration a < g.

6

✗ 3. accelerating train.

✗ 4.

a satellite rotating close to earth.

Question Type :	**MCQ**
Question ID :	**37135117189**
Option 1 ID :	**37135168753**
Option 2 ID :	**37135168755**
Option 3 ID :	**37135168754**
Option 4 ID :	**37135168756**
Status :	**Answered**
Chosen Option :	**2**

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Q.36 Let 'σ' and 'b' be Stefan's constant and Wien's constant respectively, then dimensions of 'σb' are

Ans

✗ 1. $[L^1M^{-1}T^{-3}K^{-3}]$

✗ 2. $[L^{-1}M^1T^{-3}K^{-3}]$

✗ 3. $[L^1M^1T^3K^{-3}]$

✓ 4. $[L^1M^1T^{-3}K^{-3}]$

Question Type : **MCQ**
Question ID : **37135117190**
Option 1 ID : **37135168757**
Option 2 ID : **37135168759**
Option 3 ID : **37135168760**
Option 4 ID : **37135168758**
Status : **Answered**
Chosen Option : **4**

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Q.37 The root mean square velocity of molecules of a gas is 200 m/s. What will be the root mean square velocity of the molecules, if the molecular weight is doubled and the absolute temperature is halved?

Ans

1. $50\ \text{m/s}$

2. $100\ \text{m/s}$

3. $200\ \text{m/s}$

4. $\frac{100}{\sqrt{2}}\ \text{m/s}$

9

Question Type : **MCQ**
Question ID : **37135117169**
Option 1 ID : **37135168673**
Option 2 ID : **37135168675**
Option 3 ID : **37135168676**
Option 4 ID : **37135168674**
Status : **Answered**
Chosen Option : **2**

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Q.38 Two galvanometers 'A' and 'B' require currents of 4 mA and 7mA, respectively to produce the same deflection of 20 divisions. If 'S_A' and 'S_B' are their sensitivities, respectively, then

Ans

✔ 1. $S_A > S_B$

✘ 2. $S_A = S_B = \frac{4}{7}$

✘ 3. $S_B = \frac{7}{4} = S_A$

✘ 4. $S_A < S_B$

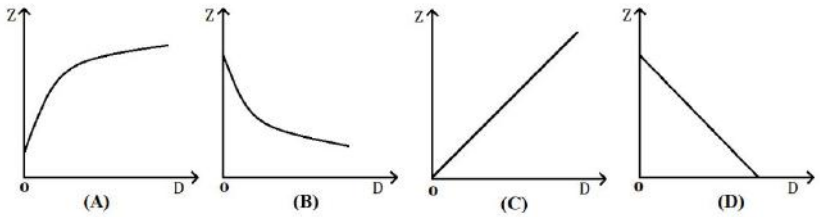
14

Question Type : **MCQ**
Question ID : **37135117183**
Option 1 ID : **37135168732**
Option 2 ID : **37135168731**
Option 3 ID : **37135168729**
Option 4 ID : **37135168730**
Status : **Answered**
Chosen Option : **1**

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Q.39 A graph is plotted between the fringe-width (z) and the distance (D) between the slit and eye-piece, keeping other adjustment same. The correct graph is



Ans

1. (B)
2. (A)
3. (C)
4. (D)

Question Type : **MCQ**
Question ID : **37135117160**
Option 1 ID : **37135168638**
Option 2 ID : **37135168637**
Option 3 ID : **37135168639**
Option 4 ID : **37135168640**
Status : **Answered**
Chosen Option : **3**

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Q.40 Two cells having unknown e.m.f.s E_1 and E_2 ($E_1 > E_2$) are connected in potentiometer circuit so as to assist each other. The null point obtained is at 490 cm from the higher potential end. When cell E_2 is connected so as to oppose cell E_1, the null point is obtained at 90 cm from the same end. The ratio of the e.m.f.s of two cells $\left(\frac{E_1}{E_2}\right)$ is

13

Ans

✗ 1. 0·689

✗ 2. 0·182

✗ 3. 5·33

✓ 4. 1·45

Question Type : **MCQ**
Question ID : **37135117156**
Option 1 ID : **37135168622**
Option 2 ID : **37135168621**
Option 3 ID : **37135168624**
Option 4 ID : **37135168623**
Status : **Answered**
Chosen Option : **4**

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Q.41 If the surface tension of a soap solution is 3×10^{-2} N/m, then the work done in forming a soap film of 20 cm x 5 cm will be

Ans

1. 6×10^{-3} J

2. 6×10^{-4} J

3. 6×10^{-2} J

4. 6 J

6

Question Type : **MCQ**
Question ID : **37135117175**
Option 1 ID : **37135168698**
Option 2 ID : **37135168699**
Option 3 ID : **37135168697**
Option 4 ID : **37135168700**
Status : **Answered**
Chosen Option : **2**

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Q.42 An A.C. circuit contains resistance of 12Ω and inductive reactance 5Ω. The phase angle between current and potential difference will be

Ans

✔ 1. $\cos^{-1}\left(\frac{12}{13}\right)$

✘ 2. $\sin^{-1}\left(\frac{12}{13}\right)$

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✘ 3. $\cos^{-1}\left(\frac{5}{12}\right)$

✘ 4. $\sin^{-1}\left(\frac{5}{12}\right)$

Question Type : **MCQ**
Question ID : **37135117178**
Option 1 ID : **37135168712**
Option 2 ID : **37135168711**
Option 3 ID : **37135168709**
Option 4 ID : **37135168710**
Status : **Answered**
Chosen Option : **1**

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Q.43 The escape velocity of a body from any planet whose mass is six times the mass of earth and radius is twice the radius of earth will be

(V_e = escape velocity of a body from the earth's surface)

Ans

1. $\sqrt{3}\,V_e$

2. $2V_e$

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

4. $2\sqrt{2}\,V_e$

2

Question Type : **MCQ**
Question ID : **37135117163**
Option 1 ID : **37135168649**
Option 2 ID : **37135168652**
Option 3 ID : **37135168650**
Option 4 ID : **37135168651**
Status : **Answered**
Chosen Option : **1**

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Q.44 A carrier wave of peak voltage 16 volt is used to transmit a signal. If the modulation index is 75 %, the peak voltage of the modulating signal is

Ans

✗ 1. 6 volt

✗ 2. 24 volt

✗ 3. 18 volt

✓ 4. 12 volt

16

Question Type : **MCQ**
Question ID : **37135117200**
Option 1 ID : **37135168797**
Option 2 ID : **37135168800**
Option 3 ID : **37135168799**
Option 4 ID : **37135168798**
Status : **Answered**
Chosen Option : **2**

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Q.45 A domain in a ferromagnetic substance is in the form of a cube of side 1 μm. If it contains 8×10^{10} atoms and each atomic dipole has a dipole moment of 9×10^{-24} A/m^2, then the magnetisation of the domain is

Ans

1. $7{\cdot}2 \times 10^{9}\ Am^{-1}$.
2. $7{\cdot}2 \times 10^{5}\ Am^{-1}$.
3. $7{\cdot}2 \times 10^{12}\ Am^{-1}$.
4. $7{\cdot}2 \times 10^{3}\ Am^{-1}$.

15

Question Type : **MCQ**
Question ID : **37135117176**
Option 1 ID : **37135168703**
Option 2 ID : **37135168701**
Option 3 ID : **37135168704**
Option 4 ID : **37135168702**
Status : **Answered**
Chosen Option : **2**

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Q.46 A rope is wound around a solid cylinder of mass 1 kg and radius 0·4 m. What is the angular acceleration of cylinder, if the rope is pulled with a force of 25 N? (cylinder is rotating about its own axis)

Ans

✗ 1. $50\ rad/s^2$

✓ 2. $125\ rad/s^2$

✗ 3. $10\ rad/s^2$

✗ 4. $1\ rad/s^2$

3

Question Type : **MCQ**
Question ID : **37135117179**
Option 1 ID : **37135168715**
Option 2 ID : **37135168716**
Option 3 ID : **37135168714**
Option 4 ID : **37135168713**
Status : **Answered**
Chosen Option : **4**

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Q.47 Using Bohr's model, the orbital period of electron in hydrogen atom in n^{th} orbit is (ϵ_0= permittivity of free space, h = Planck's constant, m = mass of electron, e = electronic charge)

Ans

1. $\frac{8\epsilon_0^2 n^3 h^3}{me^4}$

2. $\frac{2\epsilon_0^2 n^3 h^3}{me^4}$

3. $\frac{2\varepsilon_0 n^2 h^2}{me^4}$

4. $\frac{4\epsilon_0^2 n^3 h^3}{me^4}$

19

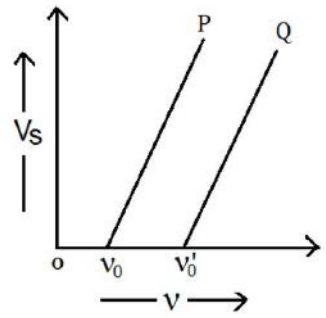
Question Type : **MCQ**
Question ID : **37135117171**
Option 1 ID : **37135168684**
Option 2 ID : **37135168681**
Option 3 ID : **37135168682**
Option 4 ID : **37135168683**
Status : **Answered**
Chosen Option : **1**

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Q.48

The graph of stopping potential (V_s) against frequency (ν) of incident radiation is plotted for two different metals 'P' and 'Q' as shown in the graph. ϕ_P and ϕ_q are work functions of P and Q respectively, then



17

Ans

1. $\phi_P = \phi_Q$

2. $\nu_0' < \nu_0$

3. $\phi_P < \phi_Q$

4. $\phi_P > \phi_Q$

Question Type : **MCQ**
Question ID : **37135117186**
Option 1 ID : **37135168741**
Option 2 ID : **37135168744**
Option 3 ID : **37135168742**
Option 4 ID : **37135168743**
Status : **Answered**
Chosen Option : **2**

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Q.49 At the poles, a stretched wire of a given length vibrates in unison with a tuning fork. At the equator, for same setting to produce resonance with same fork, the vibrating length of wire

Ans

✗ 1. should be increased.

✗ 2. should be 3 times the original length.

✗ 3. should be same.

✓ 4. should be decreased.

8

Question Type : **MCQ**
Question ID : **37135117184**
Option 1 ID : **37135168734**
Option 2 ID : **37135168736**
Option 3 ID : **37135168735**
Option 4 ID : **37135168733**
Status : **Answered**
Chosen Option : **2**

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Q.50 A bob of a simple pendulum has mass 'm' and is oscillating with an amplitude 'a'. If the length of the pendulum is 'L' then the maximum tension in the string is [cos 0° = 1, g = acceleration due to gravity]

Ans

✔ 1. $mg\left[1+\left(\frac{a}{L}\right)^2\right]$

✘ 2. $mg\left[1-\left(\frac{L}{a}\right)^2\right]$

✘ 3. $mg\left[1+\left(\frac{L}{a}\right)^2\right]$

✘ 4. $mg\left[1-\left(\frac{a}{L}\right)^2\right]$

4

Question Type : **MCQ**
Question ID : **37135117153**
Option 1 ID : **37135168612**
Option 2 ID : **37135168610**
Option 3 ID : **37135168609**
Option 4 ID : **37135168611**
Status : **Answered**
Chosen Option : **1**

Section : **Chemistry**

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Q.1 A first order reaction is 25 % completed in 40 minutes. What is the rate constant k for the reaction?

Ans

1. $\dfrac{2{\cdot}303 \times \log 1{\cdot}33}{40}$

2. $2 \cdot 303 \times \log \frac{4}{3}$

3. $\dfrac{2{\cdot}303}{40} \times \log \dfrac{1}{4}$

4. $\dfrac{2{\cdot}303 \times \log 4}{40 \times 3}$

Question Type : **MCQ**
Question ID : **37135117216**
Option 1 ID : **37135168864**
Option 2 ID : **37135168863**
Option 3 ID : **37135168861**
Option 4 ID : **37135168862**
Status : **Answered**
Chosen Option : **1**

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Q.2

For first order reaction the concentration of reactant decreases form 0·2 to 0·1 M in 100 minutes. What is the rate constant of the reaction?

Ans

✗ 1. $6{\cdot}93\ min^{-1}$

✗ 2. $69{\cdot}3\ min^{-1}$

✓ 3. $6{\cdot}93 \times 10^{-3}\ min^{-1}$

✗ 4. $144{\cdot}3\ min^{-1}$

Question Type : **MCQ**
Question ID : **37135117220**
Option 1 ID : **37135168880**
Option 2 ID : **37135168877**
Option 3 ID : **37135168879**
Option 4 ID : **37135168878**
Status : **Answered**
Chosen Option : **3**

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Q.3 Which carbon atoms of ∝-D-glucopyranose and β-D-Fructofuranose respectively are linked together to form glycosidic linkage in sucrose?

Ans

1. C-2 of ∝-D-glucopyranose and C-3 of β-D-Fructofuranose

2. C-1 of ∝-D-glucopyranose and C-6 of β-D-Fructofuranose

3. C-2 of ∝-D-glucopyranose and C-2 of β-D-Fructofuranose

4. C-1 of ∝-D-glucopyranose and C-2 of β-D-Fructofuranose

Question Type : **MCQ**
Question ID : **37135117218**
Option 1 ID : **37135168871**
Option 2 ID : **37135168872**
Option 3 ID : **37135168869**
Option 4 ID : **37135168870**
Status : **Answered**
Chosen Option : **4**

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Q.4

Identify the enzyme 'X' in the following reaction.

$$H_2O_2\,(aq) \xrightarrow{X} H_2O_{(l)} + \frac{1}{2}O_2\,(g)$$

Ans

✗ 1. amylase

✗ 2. ferroxidase

✓ 3. Catalase

✗ 4. carbonic anhydrase

Question Type : **MCQ**
Question ID : **37135117224**
Option 1 ID : **37135168894**
Option 2 ID : **37135168895**
Option 3 ID : **37135168893**
Option 4 ID : **37135168896**
Status : **Answered**
Chosen Option : **4**

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Q.5

Identify tranquilizer from the following?

Ans

1. Prontosil

2. Aspirin

3. Meprobamate

4. Salvarsan

Question Type : **MCQ**
Question ID : **37135117243**
Option 1 ID : **37135168971**
Option 2 ID : **37135168969**
Option 3 ID : **37135168972**
Option 4 ID : **37135168970**
Status : **Answered**
Chosen Option : **3**

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Q.6

Which among the following is an ambidentate ligand?

Ans

✔ 1. NO_2^-

✘ 2. H_2O

✘ 3. $\ddot{N}H_3$

✘ 4. $\begin{matrix} COO^- \\ | \\ COO^- \end{matrix}$

Question Type : **MCQ**
Question ID : **37135117232**
Option 1 ID : **37135168927**
Option 2 ID : **37135168925**
Option 3 ID : **37135168926**
Option 4 ID : **37135168928**
Status : **Answered**
Chosen Option : **1**

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Q.7 Which of the following is correct decreasing order of the repulsive interaction of electron pairs in a molecule?

Ans

1. lone pair-lone pair > lone pair-bond pair > bond pair-bond pair

2. bond pair-bond pair = bond pair-lone pair > lone pair-lone pair

3. lone pair-bond pair > lone pair-lone pair > bond pair-bond pair

4. bond pair-bond pair > lone pair-bond pair > lone pair-lone pair

Question Type : **MCQ**
Question ID : **37135117235**
Option 1 ID : **37135168939**
Option 2 ID : **37135168940**
Option 3 ID : **37135168938**
Option 4 ID : **37135168937**
Status : **Answered**
Chosen Option : **1**

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Q.8

If boiling point of urea solution is 100·18°C and kb for water is 0·512 K kg mol^{-1}, molality of solution is? (Boiling point of water = 100°C)

Ans

✗ 1. 0·25 mol kg^{-1}

✗ 2. 0·6 mol kg^{-1}

✗ 3. 0·45 mol kg^{-1}

✓ 4. 0·35 mol kg^{-1}

Question Type : **MCQ**
Question ID : **37135117234**
Option 1 ID : **37135168933**
Option 2 ID : **37135168936**
Option 3 ID : **37135168935**
Option 4 ID : **37135168934**
Status : **Answered**
Chosen Option : **4**

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Q.9

What is the unit of viscosity?

Ans

✗ 1. $Kg\ s^{-1}$

✓ 2. Nsm^{-2}

✗ 3. $Kg\ s^{2}$

✗ 4. Nm^{-1}

Question Type : **MCQ**
Question ID : **37135117213**
Option 1 ID : **37135168851**
Option 2 ID : **37135168849**
Option 3 ID : **37135168852**
Option 4 ID : **37135168850**
Status : **Answered**
Chosen Option : **2**

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Q.10 Which of the following 0·10 m aqueous solutions will have maximum ΔT_f value?

Ans

✔ 1. $Al_2(SO_4)_3$

✘ 2. KI

✘ 3. $C_{12}H_{22}O_{11}$

✘ 4. $NH_2\text{-}CO\text{-}NH_2$

Question Type : **MCQ**
Question ID : **37135117223**
Option 1 ID : **37135168891**
Option 2 ID : **37135168889**
Option 3 ID : **37135168890**
Option 4 ID : **37135168892**
Status : **Answered**
Chosen Option : **1**

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Q.11 Which of the following molecules has a central atom with complete octet?

Ans

1. Methane

2. Sulphur hexafluoride

3. Aluminium chloride

4. Boron trifluoride

Question Type : **MCQ**
Question ID : **37135117231**
Option 1 ID : **37135168924**
Option 2 ID : **37135168922**
Option 3 ID : **37135168923**
Option 4 ID : **37135168921**
Status : **Answered**
Chosen Option : **1**

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Q.12

What is the percentage of unoccupied space in fcc unit cell?

Ans

1. 74 %

2. 26 %

3. 68 %

4. 32 %

Question Type : **MCQ**
Question ID : **37135117210**
Option 1 ID : **37135168837**
Option 2 ID : **37135168838**
Option 3 ID : **37135168839**
Option 4 ID : **37135168840**
Status : **Answered**
Chosen Option : **1**

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Q.13 What is the range of number of carbon atoms in alkanes found in paraffin wax?

Ans

1. C_{21} to C_{30}

2. C_{17} to C_{18}

3. C_{19} to C_{20}

4. C_6 to C_8

Question Type : **MCQ**
Question ID : **37135117211**
Option 1 ID : **37135168843**
Option 2 ID : **37135168841**
Option 3 ID : **37135168844**
Option 4 ID : **37135168842**
Status : **Answered**
Chosen Option : **1**

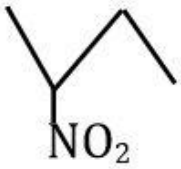
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Q.14

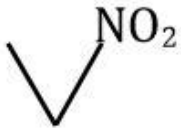
Which of the following compounds does NOT react with bromine in alkaline medium?

Ans

1. 

2. 

3. 

4. 

Question Type : **MCQ**
Question ID : **37135117205**
Option 1 ID : **37135168820**
Option 2 ID : **37135168819**
Option 3 ID : **37135168817**
Option 4 ID : **37135168818**
Status : **Answered**
Chosen Option : **2**

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Q.15 Which of the following compounds is obtained when phenol react with bromine water?

Ans

1. 2,4,6-tribromophenol

2. 4-Bromophenol

3. 2-Bromophenol

4. 3-Bromophenol

Question Type : **MCQ**
Question ID : **37135117209**
Option 1 ID : **37135168836**
Option 2 ID : **37135168835**
Option 3 ID : **37135168833**
Option 4 ID : **37135168834**
Status : **Answered**
Chosen Option : **1**

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Q.16 Number of electrons involved in the reaction when 1 faraday of electricity is passed through an electrolytic solution is?

Ans

1. 8×10^{16}

2. 96500

3. 12×10^{46}

4. $6{\cdot}022 \times 10^{23}$

Question Type : **MCQ**
Question ID : **37135117207**
Option 1 ID : **37135168825**
Option 2 ID : **37135168828**
Option 3 ID : **37135168826**
Option 4 ID : **37135168827**
Status : **Answered**
Chosen Option : **4**

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Q.17 What is the highest oxidation state possessed by phosphorus in it's oxyacids?

Ans

1. $+6$

2. $+4$

3. $+3$

4. $+5$

Question Type : **MCQ**
Question ID : **37135117237**
Option 1 ID : **37135168948**
Option 2 ID : **37135168946**
Option 3 ID : **37135168945**
Option 4 ID : **37135168947**
Status : **Answered**
Chosen Option : **4**

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Q.18

Identify the number of donor groups present in EDTA.

Ans

1. Two

2. Three

3. Six

4. Four

Question Type : **MCQ**
Question ID : **37135117214**
Option 1 ID : **37135168853**
Option 2 ID : **37135168854**
Option 3 ID : **37135168856**
Option 4 ID : **37135168855**
Status : **Answered**
Chosen Option : **3**

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Q.19

How many hydrogen atoms are surrounding each oxygen atom in structure of ice?

Ans

1. 2

2. 4

3. 3

4. 1

Question Type : **MCQ**
Question ID : **37135117241**
Option 1 ID : **37135168962**
Option 2 ID : **37135168964**
Option 3 ID : **37135168963**
Option 4 ID : **37135168961**
Status : **Answered**
Chosen Option : **3**

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Q.20 Which of the following amines is most basic in nature in aqueous phase?

Ans

1. Ammonia

2. Trimethylamine

3. Methylamine

4. Dimethylamine

Question Type : **MCQ**
Question ID : **37135117247**
Option 1 ID : **37135168988**
Option 2 ID : **37135168987**
Option 3 ID : **37135168985**
Option 4 ID : **37135168986**
Status : **Answered**
Chosen Option : **4**

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Q.21 How many faradays of electricity is required to produce 4.8 g of Mg at cathode in the electrolysis of molten $MgCl_2$? (Molar mass of Mg = 24 g/mol)

Ans

✔ 1. 0.4 F

✘ 2. 4 F

✘ 3. 10 F

✘ 4. 1 F

Question Type : **MCQ**
Question ID : **37135117201**
Option 1 ID : **37135168804**
Option 2 ID : **37135168802**
Option 3 ID : **37135168801**
Option 4 ID : **37135168803**
Status : **Answered**
Chosen Option : **1**

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Q.22 What is the name of reaction involving replacement of diazonium group by chloride using cuprous (I) salt?

Ans

✗ 1. Wolff-Kishner reduction

✗ 2. Friedel Craft's reaction

✓ 3. Sandmeyer's reaction

✗ 4. Balz Schiemann reaction

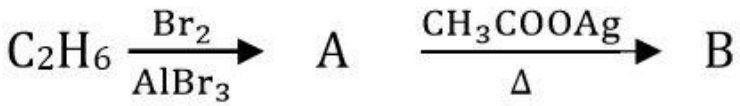
Question Type : **MCQ**
Question ID : **37135117208**
Option 1 ID : **37135168832**
Option 2 ID : **37135168831**
Option 3 ID : **37135168830**
Option 4 ID : **37135168829**
Status : **Answered**
Chosen Option : **3**

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Q.23

Identify 'B' in the following reaction



Ans

1. $CH_3COOC_2H_5$

2. $C_2H_5COOCH_3$

3. CH_3COOCH_3

4. $C_2H_5COOC_2H_5$

Question Type : **MCQ**
Question ID : **37135117202**
Option 1 ID : **37135168806**
Option 2 ID : **37135168805**
Option 3 ID : **37135168808**
Option 4 ID : **37135168807**
Status : **Answered**
Chosen Option : **2**

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Q.24

Which of the following molecular formula represents Marshall's acid?

Ans

✗ 1. H_2SO_5

✗ 2. $H_2S_2O_7$

✗ 3. $H_2S_2O_6$

✓ 4. $H_2S_2O_8$

Question Type : **MCQ**
Question ID : **37135117246**
Option 1 ID : **37135168981**
Option 2 ID : **37135168984**
Option 3 ID : **37135168982**
Option 4 ID : **37135168983**
Status : **Answered**
Chosen Option : **1**

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Q.25

Which of the following compounds reacts with ammonia to form urotropine?

Ans

1. Ethanal

2. Methanal

3. Propanone

4. Propanal

Question Type : **MCQ**
Question ID : **37135117228**
Option 1 ID : **37135168910**
Option 2 ID : **37135168909**
Option 3 ID : **37135168912**
Option 4 ID : **37135168911**
Status : **Answered**
Chosen Option : **2**

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Q.26

For the reaction,

$N_{2(g)} + 3H_{2(g)} \rightarrow 2\,NH_{3(g)}$ ΔH is equal to

Ans

✗ 1. $\Delta U + RT$

✗ 2. $\Delta U + 2RT$

✗ 3. $\Delta U - RT$

✓ 4. $\Delta U - 2RT$

Question Type : **MCQ**
Question ID : **37135117240**
Option 1 ID : **37135168959**
Option 2 ID : **37135168957**
Option 3 ID : **37135168960**
Option 4 ID : **37135168958**
Status : **Answered**
Chosen Option : **4**

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Q.27

Which of the following compound is highly reactive towards HCN?

Ans

✗ 1. C_6H_5-CHO

✓ 2. H-CHO

✗ 3. CH_3-CO-CH_3

✗ 4. CH_3-CHO

Question Type : **MCQ**
Question ID : **37135117239**
Option 1 ID : **37135168955**
Option 2 ID : **37135168953**
Option 3 ID : **37135168956**
Option 4 ID : **37135168954**
Status : **Answered**
Chosen Option : **1**

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Q.28 Which of the following pairs of monomers is used for the preparation of dextron?

Ans

✗ 1. 3-Hydroxy butanoic acid and 3-hydroxy pentanoic acid

✗ 2. Glycine and ω–amino caproic acid

✓ 3. Lactic acid and glycollic acid

✗ 4. Isobutylene and Isoprene

Question Type : **MCQ**
Question ID : **37135117230**
Option 1 ID : **37135168918**
Option 2 ID : **37135168919**
Option 3 ID : **37135168917**
Option 4 ID : **37135168920**
Status : **Answered**
Chosen Option : **3**

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Q.29

Identify A in the following reaction

$$A + CH_3MgBr \xrightarrow{ether} complex \xrightarrow{H_3O^+} (CH_3)_3C\text{-}OH$$

Ans

✗ 1. Acetaldehyde

✗ 2. Propionaldehyde

✗ 3. Acetyl chloride

✓ 4. Acetone

Question Type : **MCQ**
Question ID : **37135117222**
Option 1 ID : **37135168885**
Option 2 ID : **37135168888**
Option 3 ID : **37135168887**
Option 4 ID : **37135168886**
Status : **Answered**
Chosen Option : **4**

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Q.30 The vapour pressure of solvent decreases by 10 mm Hg if mole fraction of non volatile solute is 0·2 Calculate vapour pressure of solvent.

Ans

✔ 1. 50 mm of Hg

✘ 2. 70 mm of Hg

✘ 3. 40 mm of Hg

✘ 4. 60 mm of Hg

Question Type : **MCQ**
Question ID : **37135117227**
Option 1 ID : **37135168906**
Option 2 ID : **37135168908**
Option 3 ID : **37135168905**
Option 4 ID : **37135168907**
Status : **Answered**
Chosen Option : **1**

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Q.31

The end product C of the following reaction is

$$C_2H_5NH_2 \xrightarrow{HNO_2} A \xrightarrow{PCl_5} B \xrightarrow[alcohol]{NH_3} C$$

Ans

1. Ethanol

2. Ethanamine

3. Chloroethane

4. Nitroethane

Question Type : **MCQ**
Question ID : **37135117244**
Option 1 ID : **37135168976**
Option 2 ID : **37135168975**
Option 3 ID : **37135168974**
Option 4 ID : **37135168973**
Status : **Answered**
Chosen Option : **2**

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Q.32 Which reagent among the following is used to confirm presence of aldehydic carbonyl group in glucose?

Ans

✗ 1. Acetic anhydride

✗ 2. Dilute Nitric acid

✓ 3. Bromine water

✗ 4. Hydroxylamine

Question Type : **MCQ**
Question ID : **37135117212**
Option 1 ID : **37135168848**
Option 2 ID : **37135168847**
Option 3 ID : **37135168846**
Option 4 ID : **37135168845**
Status : **Answered**
Chosen Option : **3**

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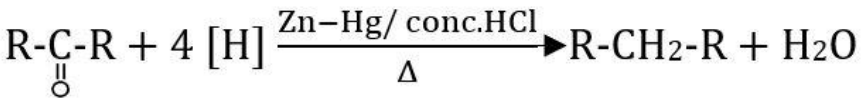
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Q.33

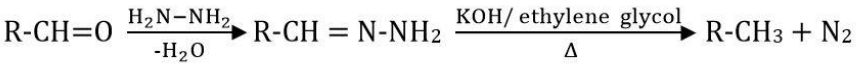
Which of the following is a Stephen reaction?

Ans

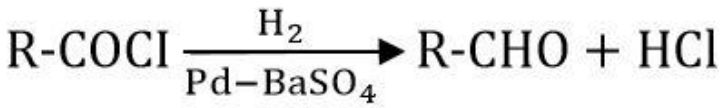
1.



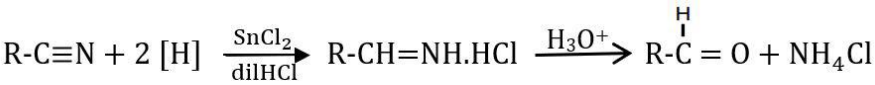
2.



3.



4.



Question Type :	**MCQ**
Question ID :	**37135117238**
Option 1 ID :	**37135168949**
Option 2 ID :	**37135168951**
Option 3 ID :	**37135168952**
Option 4 ID :	**37135168950**
Status :	**Answered**
Chosen Option :	**4**

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Q.34 Which among the following sets of elements is present in chalcopyrite?

Ans

✗ 1. Fe, S

✗ 2. Al, O

✗ 3. Al, Fe, O

✓ 4. Cu, Fe, S

Question Type : **MCQ**
Question ID : **37135117233**
Option 1 ID : **37135168932**
Option 2 ID : **37135168931**
Option 3 ID : **37135168930**
Option 4 ID : **37135168929**
Status : **Answered**
Chosen Option : **4**

Q.35 An element crystallises in fcc type of unit cell. The volume of one unit cell is $24{\cdot}99 \times 10^{-24}\text{cm}^3$ and density of the element 7·2 g cm^{-3}. Calculate the number of unit cells in 36 g of pure sample of element?

Ans

✓ 1. $2{\cdot}0 \times 10^{23}$

✗ 2. $2{\cdot}0 \times 10^{21}$

✗ 3. $2{\cdot}0 \times 10^{24}$

✗ 4. $1{\cdot}25 \times 10^{21}$

Question Type : **MCQ**
Question ID : **37135117217**
Option 1 ID : **37135168867**
Option 2 ID : **37135168865**
Option 3 ID : **37135168866**
Option 4 ID : **37135168868**
Status : **Answered**
Chosen Option : **3**

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Q.36

What is the oxidation number of Mn in MnO_4^{2-} ion?

Ans

1. -6

2. $+6$

3. -8

4. $+8$

Question Type : **MCQ**
Question ID : **37135117219**
Option 1 ID : **37135168875**
Option 2 ID : **37135168873**
Option 3 ID : **37135168876**
Option 4 ID : **37135168874**
Status : **Answered**
Chosen Option : **2**

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Q.37

Identify the correct decreasing order of densities of d -block elements.

Ans

1. $Fe > Ni > V > Cr$

2. $Cr > Fe > V > Ni$

3. $Ni > Fe > Cr > V$

4. $V > Cr > Fe > Ni$

Question Type : **MCQ**
Question ID : **37135117225**
Option 1 ID : **37135168900**
Option 2 ID : **37135168898**
Option 3 ID : **37135168899**
Option 4 ID : **37135168897**
Status : **Answered**
Chosen Option : **3**

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Q.38 When 6·0 g of graphite reacts with dihydrogen to give methane gas, 37·4 kJ of heat is liberated. What is standard enthalpy of formation of $CH_{4(g)}$?

Ans

1. $112{\cdot}2\ kJ\ mol^{-1}$

2. $-74{\cdot}8\ kJ\ mol^{-1}$

3. $-37{\cdot}4\ kJ\ mol^{-1}$

4. $-112{\cdot}2\ kJ\ mol^{-1}$

Question Type : **MCQ**
Question ID : **37135117245**
Option 1 ID : **37135168979**
Option 2 ID : **37135168978**
Option 3 ID : **37135168977**
Option 4 ID : **37135168980**
Status : **Answered**
Chosen Option : **1**

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Q.39

Which among the following polymers is used for making handles of cooker?

Ans

1. Novolac

2. Bekelite

3. Acrilan

4. Melamine

Question Type : **MCQ**
Question ID : **37135117229**
Option 1 ID : **37135168913**
Option 2 ID : **37135168914**
Option 3 ID : **37135168916**
Option 4 ID : **37135168915**
Status : **Answered**
Chosen Option : **2**

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Q.40 Which of the following reagents is used for the following conversion?

$CH_3\text{-}CH{=}CH\text{-}CHO \longrightarrow CH_3\text{-}CH{=}CH\text{-}CH_2OH$

Ans

✗ 1. H_3O^+

✗ 2. Zn-Hg/HCl

✗ 3. H_2/Ni

✓ 4. $LiAlH_4$

Question Type : **MCQ**
Question ID : **37135117215**
Option 1 ID : **37135168858**
Option 2 ID : **37135168860**
Option 3 ID : **37135168857**
Option 4 ID : **37135168859**
Status : **Answered**
Chosen Option : **4**

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Q.41

Which of the following oxyacids of sulphur contain four S=O bonds?

Ans

1. H_2SO_5

2. H_2SO_4

3. $H_2S_2O_6$

4. $H_2S_2O_4$

Question Type : **MCQ**
Question ID : **37135117242**
Option 1 ID : **37135168965**
Option 2 ID : **37135168967**
Option 3 ID : **37135168966**
Option 4 ID : **37135168968**
Status : **Answered**
Chosen Option : **4**

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Q.42

Which of the following is least reactive towards SN^1 reactions?

Ans

✗ 1. $CH_3\text{-}CH_2\text{-}Br$

✗ 2. $CH_3\text{-}CH(Br)\text{-}CH_3$

✗ 3. $(CH_3)_3C\text{-}Br$

✓ 4. $CH_3\text{-}Br$

Question Type : **MCQ**
Question ID : **37135117203**
Option 1 ID : **37135168810**
Option 2 ID : **37135168809**
Option 3 ID : **37135168811**
Option 4 ID : **37135168812**
Status : **Answered**
Chosen Option : **4**

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Q.43

Which among the following crystal lattices occupies all of the cubic holes by cations?

Ans

✗ 1. $SrCl_2$

✗ 2. CaF_2

✓ 3. CsCl

✗ 4. UO_2

Question Type : **MCQ**
Question ID : **37135117204**
Option 1 ID : **37135168815**
Option 2 ID : **37135168816**
Option 3 ID : **37135168814**
Option 4 ID : **37135168813**
Status : **Answered**
Chosen Option : **4**

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Q.44

What is standard N≡N bond enthalpy from following reaction?

$N_{2(g)} + 3H_{2(g)} \longrightarrow 2\,NH_{3(g)}$ $\Delta H° = -83$ KJ

$(\Delta H°_{(H\text{-}H)} = 435$ kJ, $\Delta H°_{(N\text{-}H)} = 389$ kJ)

Ans

✗ 1. 435 kJ

✗ 2. 2334 kJ

✓ 3. 946 kJ

✗ 4. 1305 kJ

Question Type : **MCQ**
Question ID : **37135117248**
Option 1 ID : **37135168989**
Option 2 ID : **37135168992**
Option 3 ID : **37135168990**
Option 4 ID : **37135168991**
Status : **Answered**
Chosen Option : **3**

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Q.45

What is the SI unit for electrochemical equivalent?

Ans

1. $J\ C^{-1}$

2. $Kg\ C^{-1}$

3. $Kg\ C$

4. $J\ S^{-1}$

Question Type : **MCQ**
Question ID : **37135117206**
Option 1 ID : **37135168823**
Option 2 ID : **37135168822**
Option 3 ID : **37135168821**
Option 4 ID : **37135168824**
Status : **Answered**
Chosen Option : **4**

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Q.46 How many moles of gaseous oxygen at one atmosphere is considered for the reaction with element for plotting a graph in Ellingham diagram?

Ans

1. 2

2. 0·25

3. 0·5

4. 1

Question Type : **MCQ**
Question ID : **37135117226**
Option 1 ID : **37135168902**
Option 2 ID : **37135168904**
Option 3 ID : **37135168903**
Option 4 ID : **37135168901**
Status : **Answered**
Chosen Option : **3**

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Q.47

Which of the following is NOT an example of antiseptic drug?

Ans

✗ 1. Hydrogen peroxide

✗ 2. Bithional

✗ 3. Cloroxylenol

✓ 4. Sulphur dioxide

Question Type : **MCQ**
Question ID : **37135117236**
Option 1 ID : **37135168944**
Option 2 ID : **37135168943**
Option 3 ID : **37135168941**
Option 4 ID : **37135168942**
Status : **Answered**
Chosen Option : **1**

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Q.48

Which mineral among the following contains Vanadium in it ?

Ans

1. Azurite

2. Malachite

3. Carnotite

4. Crocoisite

Question Type : **MCQ**
Question ID : **37135117221**
Option 1 ID : **37135168884**
Option 2 ID : **37135168883**
Option 3 ID : **37135168881**
Option 4 ID : **37135168882**
Status : **Answered**
Chosen Option : **4**

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Q.49 The total number of electrons around the carbon atom of methyl free radical are

Ans

✗ 1. six

✗ 2. eight

✗ 3. seven

✓ 4. nine

Question Type : **MCQ**
Question ID : **37135117249**
Option 1 ID : **37135168993**
Option 2 ID : **37135168995**
Option 3 ID : **37135168994**
Option 4 ID : **37135168996**
Status : **Answered**
Chosen Option : **3**

Q.50

What is the formula of hydrolith?

Ans

✗ 1. MgH_2

✓ 2. CaH_2

✗ 3. BaH_2

✗ 4. BeH_2

Question Type : **MCQ**
Question ID : **37135117250**
Option 1 ID : **37135168997**
Option 2 ID : **37135168998**
Option 3 ID : **37135169000**
Option 4 ID : **37135168999**
Status : **Answered**
Chosen Option : **4**

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Section : **Mathematics**

Q.1

If A and B are supplementary angles, then $\sin^2\frac{A}{2}+\sin^2\frac{B}{2}=$

Ans

✔ 1. 1

✘ 2. $\frac{1}{3}$

✘ 3. 0

✘ 4. $\frac{1}{2}$

Question Type : **MCQ**
Question ID : **37135117257**
Option 1 ID : **37135169025**
Option 2 ID : **37135169027**
Option 3 ID : **37135169026**
Option 4 ID : **37135169028**
Status : **Answered**
Chosen Option : **4**

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Q.2

$$\int_0^{\frac{\pi}{2}} \frac{\sqrt[7]{sinx}}{\sqrt[7]{sinx}+\sqrt[7]{cosx}}dx =$$

Ans

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

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

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

4. $\frac{\pi}{8}$

Question Type : **MCQ**
Question ID : **37135117263**
Option 1 ID : **37135169049**
Option 2 ID : **37135169052**
Option 3 ID : **37135169050**
Option 4 ID : **37135169051**
Status : **Answered**
Chosen Option : **3**

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Q.3

The cofactors of the elements of the first column of the matrix $A = \begin{bmatrix} 2 & 0 & -1 \\ 3 & 1 & 2 \\ -1 & 1 & 2 \end{bmatrix}$

are

Ans

1. $0, -7, 2$

2. $0, -1, 1$

3. $0, -8, 4$

4. $-1, 3, -2$

Question Type : **MCQ**
Question ID : **37135117272**
Option 1 ID : **37135169088**
Option 2 ID : **37135169085**
Option 3 ID : **37135169086**
Option 4 ID : **37135169087**
Status : **Answered**
Chosen Option : **2**

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Q.4 The quadratic equation whose roots are the numbers having arithmetic mean 34 and geometric mean 16 is

Ans

✗ 1. $x^2 + 68x - 256 = 0$

✗ 2. $x^2 - 68x - 256 = 0$

✓ 3. $x^2 - 68x + 256 = 0$

✗ 4. $x^2 + 68x + 256 = 0$

Question Type : **MCQ**
Question ID : **37135117299**
Option 1 ID : **37135169196**
Option 2 ID : **37135169195**
Option 3 ID : **37135169193**
Option 4 ID : **37135169194**
Status : **Answered**
Chosen Option : **2**

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Q.5 The area of the triangle ABC is $10\sqrt{3}$ cm^2 , angle B is 60° and its perimeter is 20 cm ,

then $\ell(AC) =$

Ans

✔ 1. 7 cm

✗ 2. 8 cm

✗ 3. 10 cm

✗ 4. 5 cm

Question Type : **MCQ**
Question ID : **37135117291**
Option 1 ID : **37135169162**
Option 2 ID : **37135169163**
Option 3 ID : **37135169164**
Option 4 ID : **37135169161**
Status : **Answered**
Chosen Option : **2**

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Q.6 The equation of the line passing through (1, 2, 3) and perpendicular to the lines

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

Ans

✔ 1. $\frac{x-1}{6}=\frac{2-y}{7}=\frac{z-3}{2}$

✘ 2. $\frac{x-1}{6}=\frac{y-2}{7}=\frac{z-3}{2}$

✘ 3. $\frac{x-1}{4}=\frac{2-y}{5}=\frac{z-3}{2}$

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

Question Type : **MCQ**
Question ID : **37135117281**
Option 1 ID : **37135169123**
Option 2 ID : **37135169124**
Option 3 ID : **37135169122**
Option 4 ID : **37135169121**
Status : **Answered**
Chosen Option : **1**

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Q.7 The area of the triangle formed by the lines joining vertex of the parabola $x^2 = 12y$ to the extremities of its latus rectum is

Ans

1. 38 sq. units

2. 18 sq. units

3. 12 sq. units

4. 28 sq. units

Question Type : **MCQ**
Question ID : **37135117287**
Option 1 ID : **37135169148**
Option 2 ID : **37135169146**
Option 3 ID : **37135169145**
Option 4 ID : **37135169147**
Status : **Answered**
Chosen Option : **2**

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Q.8 If $R = \{(a, b) / b = a - 1, a \in Z, 5 < a < 9\}$, then the range of R is

Ans

1. $\{7, 8, 9\}$

2. $\{5, 6, 7\}$

3. $\{6, 7, 8\}$

4. $\{5, 6, 7, 8, 9\}$

Question Type : **MCQ**
Question ID : **37135117283**
Option 1 ID : **37135169130**
Option 2 ID : **37135169131**
Option 3 ID : **37135169129**
Option 4 ID : **37135169132**
Status : **Answered**
Chosen Option : **2**

Q.9 The odds in favour of getting sum multiple of 3, when pair of dice are thrown is

Ans

1. 4 : 5

2. 2 : 3

3. 1 : 2

4. 3 : 4

Question Type : **MCQ**
Question ID : **37135117280**
Option 1 ID : **37135169120**
Option 2 ID : **37135169118**
Option 3 ID : **37135169117**
Option 4 ID : **37135169119**
Status : **Answered**
Chosen Option : **3**

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Q.10

$$\int \frac{dx}{x^2 + 4x + 13} =$$

Ans

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

2. $\frac{1}{6}\, log\left(\frac{x-1}{x+5}\right) + c$

3. $\frac{1}{6}\, tan^{-1}\left(\frac{x+2}{3}\right) + c$

4. $3\, tan^{-1}\left(\frac{x+2}{3}\right) + c$

Question Type : **MCQ**
Question ID : **37135117300**
Option 1 ID : **37135169197**
Option 2 ID : **37135169199**
Option 3 ID : **37135169198**
Option 4 ID : **37135169200**
Status : **Answered**
Chosen Option : **1**

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Q.11

If $2\cos^2\theta + 3\cos\theta = 2$, then permissible value of $\cos\theta$ is

Ans

✗ 1. 0

✗ 2. 1

✓ 3. $\frac{1}{2}$

✗ 4. $\frac{-1}{2}$

Question Type : **MCQ**
Question ID : **37135117278**
Option 1 ID : **37135169111**
Option 2 ID : **37135169110**
Option 3 ID : **37135169109**
Option 4 ID : **37135169112**
Status : **Answered**
Chosen Option : **2**

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Q.12

If $A = \begin{bmatrix} 4 & 5 \\ 2 & 1 \end{bmatrix}$ and $A^2 - 5A - 6I = 0$, then $A^{-1} =$

Ans

1. $\frac{1}{6}\begin{bmatrix} -1 & 5 \\ 2 & 4 \end{bmatrix}$

2. $\frac{1}{6}\begin{bmatrix} -1 & 5 \\ -2 & -4 \end{bmatrix}$

3. $\frac{1}{6}\begin{bmatrix} -1 & 5 \\ 2 & -4 \end{bmatrix}$

4. $\frac{1}{6}\begin{bmatrix} 1 & 5 \\ 2 & -4 \end{bmatrix}$

Question Type : **MCQ**
Question ID : **37135117251**
Option 1 ID : **37135169004**
Option 2 ID : **37135169003**
Option 3 ID : **37135169001**
Option 4 ID : **37135169002**
Status : **Answered**
Chosen Option : **3**

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Q.13 If $\bar{a} = 3\hat{i} + \hat{j} - \hat{k}$, $\bar{b} = 2\hat{i} - \hat{j} + 7\hat{k}$ and $\bar{c} = 7\hat{i} - \hat{j} + 23\hat{k}$ are three vectors, then which of the following statement is true.

Ans

1. $\bar{a}$, $\bar{b}$ and $\bar{c}$ are non-coplanar.

2. $\bar{a}$, $\bar{b}$ and $\bar{c}$ are coplanar.

3. $\bar{a}$, $\bar{b}$, $\bar{c}$ are mutually perpendicular.

4. $\bar{a}$ and $\bar{b}$ are collinear.

Question Type : **MCQ**
Question ID : **37135117259**
Option 1 ID : **37135169036**
Option 2 ID : **37135169035**
Option 3 ID : **37135169033**
Option 4 ID : **37135169034**
Status : **Answered**
Chosen Option : **1**

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Q.14 With usual notations, if the angles A, B, C of a ΔABC are in A.P. and $b : c = \sqrt{3} : \sqrt{2}$, then $\angle A =$

Ans

1. $55°$

2. $45°$

3. $35°$

4. $75°$

Question Type : **MCQ**
Question ID : **37135117255**
Option 1 ID : **37135169019**
Option 2 ID : **37135169018**
Option 3 ID : **37135169017**
Option 4 ID : **37135169020**
Status : **Answered**
Chosen Option : **1**

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Q.15

The order and degree of the differential equation $\left[1+\frac{1}{\left(\frac{dy}{dx}\right)^2}\right]^{\frac{5}{3}}=5\ \frac{d^2y}{dx^2}$ are

respectively

Ans

1. 2, 3

2. 3, 2

3. 5, 2

4. 2, 5

Question Type : **MCQ**
Question ID : **37135117256**
Option 1 ID : **37135169023**
Option 2 ID : **37135169024**
Option 3 ID : **37135169021**
Option 4 ID : **37135169022**
Status : **Answered**
Chosen Option : **1**

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Q.16

The range of the function $f(x) = \frac{x-3}{5-x}$, $x \neq 5$ is

Ans

1. $R - \{1\}$

2. $R - \{-5\}$

3. $R - \{5\}$

4. $R - \{-1\}$

Question Type : **MCQ**
Question ID : **37135117253**
Option 1 ID : **37135169010**
Option 2 ID : **37135169012**
Option 3 ID : **37135169011**
Option 4 ID : **37135169009**
Status : **Answered**
Chosen Option : **3**

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Q.17

If $x = a\,sint\ - b\,cost$

$y = a\,cost\ + b\,sint\,,$

then $y^3\frac{d^2y}{dx^2} + x^2 + y^2 =$

Ans

✔ 1. 0

✘ 2. 2

✘ 3. 1

✘ 4. -1

Question Type : **MCQ**
Question ID : **37135117284**
Option 1 ID : **37135169133**
Option 2 ID : **37135169136**
Option 3 ID : **37135169134**
Option 4 ID : **37135169135**
Status : **Answered**
Chosen Option : **1**

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Q.18

The principal solutions of $cotx = \sqrt{3}$ are

Ans

1. $\frac{\pi}{4}, \frac{5\pi}{4}$

2. $\frac{\pi}{6}, \frac{7\pi}{6}$

3. $\frac{\pi}{6}, \frac{5\pi}{6}$

4. $\frac{\pi}{3}, \frac{7\pi}{3}$

Question Type : **MCQ**
Question ID : **37135117252**
Option 1 ID : **37135169007**
Option 2 ID : **37135169005**
Option 3 ID : **37135169008**
Option 4 ID : **37135169006**
Status : **Answered**
Chosen Option : **2**

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Q.19

The integrating factor of the differential equation $x\frac{dy}{dx} + y\,logx = x^2$ is

Ans

✗ 1. $(logx)^x$

✗ 2. x^{logx}

✗ 3. $(logx)^2$

✓ 4. $x^{log(\sqrt{x})}$

Question Type : **MCQ**
Question ID : **37135117275**
Option 1 ID : **37135169099**
Option 2 ID : **37135169097**
Option 3 ID : **37135169098**
Option 4 ID : **37135169100**
Status : **Answered**
Chosen Option : **4**

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Q.20 If the population grows at the rate of 8 % per year, then the time taken for the population to be doubled, is (Given $log\ 2 = 0 \cdot 6912$)

Ans

1. 6·8 years

2. 10·27 years

3. 8·64 years

4. 4·3 years

Question Type : **MCQ**
Question ID : **37135117282**
Option 1 ID : **37135169128**
Option 2 ID : **37135169127**
Option 3 ID : **37135169126**
Option 4 ID : **37135169125**
Status : **Answered**
Chosen Option : **4**

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Q.21 The area of the square increases at the rate of 0·5 cm^2/sec. The rate at which its perimeter is increasing when the side of the square is 10 cm long, is

Ans

✗ 1. 0·3 cm/sec

✓ 2. 0·1 cm/sec

✗ 3. 0·2 cm/sec

✗ 4. 0·4 cm/sec

Question Type : **MCQ**
Question ID : **37135117279**
Option 1 ID : **37135169115**
Option 2 ID : **37135169113**
Option 3 ID : **37135169114**
Option 4 ID : **37135169116**
Status : **Answered**
Chosen Option : **2**

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Q.22 The equation of a line passing through the point $(7, -4)$ and perpendicular to the line passing through the points $(2, 3)$ and $(1, -2)$ is

Ans

1. $x + 5y + 13 = 0$

2. $x - 5y - 13 = 0$

3. $x - 2y - 15 = 0$

4. $x + 2y + 1 = 0$

Question Type : **MCQ**
Question ID : **37135117271**
Option 1 ID : **37135169083**
Option 2 ID : **37135169082**
Option 3 ID : **37135169084**
Option 4 ID : **37135169081**
Status : **Answered**
Chosen Option : **1**

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Q.23

$$\int sin^{-1}x \ dx =$$

Ans

1. $x\ sin^{-1}x + \sqrt{1-x^2} + c$

2. $x\ sin^{-1}x - \sqrt{1-x^2} + c$

3. $x\ sin^{-1}x - \sqrt{1+x^2} + c$

4. $x\ sin^{-1}x + \sqrt{1+x^2} + c$

Question Type : **MCQ**
Question ID : **37135117267**
Option 1 ID : **37135169067**
Option 2 ID : **37135169066**
Option 3 ID : **37135169068**
Option 4 ID : **37135169065**
Status : **Answered**
Chosen Option : **1**

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Q.24 The equation of a plane containing the point $(1, -1, 2)$ and perpendicular to the planes $2x + 3y - 2z = 5$ and $x + 2y - 3z = 8$ is

Ans

1. $\bar{r}.(5\hat{i} - 4\hat{j} - \hat{k}) = 7$

2. $\bar{r}.(5\hat{i} + 4\hat{j} + 2\hat{k}) = 5$

3. $\bar{r}.(4\hat{i} - 5\hat{j} + 3\hat{k}) = 15$

4. $\bar{r}.(5\hat{i} + 4\hat{j} - \hat{k}) = 5$

Question Type : **MCQ**
Question ID : **37135117293**
Option 1 ID : **37135169171**
Option 2 ID : **37135169169**
Option 3 ID : **37135169172**
Option 4 ID : **37135169170**
Status : **Answered**
Chosen Option : **1**

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Q.25 The equation of the normal to the curve $2x^2 + y^2 = 12$ at the point $(2, 2)$ is

Ans

1. $2x - y + 6 = 0$

2. $2x + y - 6 = 0$

3. $x + 2y + 2 = 0$

4. $x - 2y + 2 = 0$

Question Type : **MCQ**
Question ID : **37135117260**
Option 1 ID : **37135169040**
Option 2 ID : **37135169038**
Option 3 ID : **37135169037**
Option 4 ID : **37135169039**
Status : **Answered**
Chosen Option : **4**

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Q.26

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

Ans

1. $\left(-\frac{1}{2}\right)\frac{1}{\sqrt{1-x^2}}$

2. $\left(-\frac{1}{2}\right)\frac{1}{\sqrt{x^2-1}}$

3. $\left(\frac{1}{4}\right)\frac{1}{\sqrt{x^2-1}}$

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

Question Type : **MCQ**
Question ID : **37135117290**
Option 1 ID : **37135169157**
Option 2 ID : **37135169159**
Option 3 ID : **37135169160**
Option 4 ID : **37135169158**
Status : **Answered**
Chosen Option : **1**

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Q.27 The c. d. f. $F(x)$ associated with p. d. f. $f(x) = 3\ (1 - 2x^2)$ if $0 < x < 1$

$= 0$ otherwise

is $k\left(x - \frac{2x^3}{k}\right)$, then value of k is

Ans

✔ 1. 3

✘ 2. 1

✘ 3. $\frac{1}{3}$

✘ 4. $\frac{1}{6}$

Question Type : **MCQ**
Question ID : **37135117286**
Option 1 ID : **37135169143**
Option 2 ID : **37135169141**
Option 3 ID : **37135169142**
Option 4 ID : **37135169144**
Status : **Answered**
Chosen Option : **1**

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Q.28 The area of the region bounded by the curve $y = sinx$ between $x = -\pi$ and $x = \frac{3\pi}{2}$ is

Ans

1. $2\ (\text{unit})^2$

2. $5\ (\text{unit})^2$

3. $3\ (\text{unit})^2$

4. $1\ (\text{unit})^2$

Question Type : **MCQ**
Question ID : **37135117268**
Option 1 ID : **37135169071**
Option 2 ID : **37135169069**
Option 3 ID : **37135169070**
Option 4 ID : **37135169072**
Status : **Answered**
Chosen Option : **2**

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Q.29 If the sum of the mean and the variance of a binomial distribution for 5 trials is 1·8 ,

then p =

Ans

1. 0·4

2. 0·2

3. 0·8

4. 0·18

Question Type : **MCQ**
Question ID : **37135117292**
Option 1 ID : **37135169168**
Option 2 ID : **37135169166**
Option 3 ID : **37135169167**
Option 4 ID : **37135169165**
Status : **Answered**
Chosen Option : **2**

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Q.30

$$\frac{1-sin\theta+cos\theta}{1-sin\theta-cos\theta}=$$

Ans

✗ 1. $cot\frac{\theta}{2}$

✓ 2. $-cot\frac{\theta}{2}$

✗ 3. $tan\frac{\theta}{2}$

✗ 4. $-tan\frac{\theta}{2}$

Question Type : **MCQ**
Question ID : **37135117264**
Option 1 ID : **37135169055**
Option 2 ID : **37135169056**
Option 3 ID : **37135169053**
Option 4 ID : **37135169054**
Status : **Answered**
Chosen Option : **2**

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Q.31

$$\int_0^1 tan^{-1}\left(\frac{2x-1}{1+x-x^2}\right)dx =$$

Ans

✗ 1. 1

✗ 2. 4

✗ 3. 2

✓ 4. 0

Question Type :	**MCQ**
Question ID :	**37135117270**
Option 1 ID :	**37135169077**
Option 2 ID :	**37135169078**
Option 3 ID :	**37135169080**
Option 4 ID :	**37135169079**
Status :	**Answered**
Chosen Option :	**4**

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Q.32

$$\int log\, x \cdot (log\, x + 2)\, dx =$$

Ans

1. $e^x\,(logx)^2 + c$

2. $(logx)^2 + c$

3. $x\,(logx)^2 + c$

4. $x\, logx + c$

Question Type :	**MCQ**
Question ID :	**37135117261**
Option 1 ID :	**37135169044**
Option 2 ID :	**37135169043**
Option 3 ID :	**37135169041**
Option 4 ID :	**37135169042**
Status :	**Answered**
Chosen Option :	**3**

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Q.33

A line makes angles $\propto, \beta, \gamma$ with the co-ordinate axes and $\propto + \beta = 90°$, then $\gamma =$

Ans

✗ 1. $60°$

✓ 2. $90°$

✗ 3. $45°$

✗ 4. $30°$

Question Type : **MCQ**
Question ID : **37135117298**
Option 1 ID : **37135169190**
Option 2 ID : **37135169189**
Option 3 ID : **37135169191**
Option 4 ID : **37135169192**
Status : **Answered**
Chosen Option : **2**

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Q.34

$$\int_0^1 \left(1 - \frac{x}{1!} + \frac{x^2}{2!} - \frac{x^3}{3!} + \cdots \text{ upto } \infty\right) e^{2x}\, dx =$$

Ans

1. e^2

2. $e - 1$

3. $e + 1$

4. e

Question Type : **MCQ**
Question ID : **37135117258**
Option 1 ID : **37135169032**
Option 2 ID : **37135169031**
Option 3 ID : **37135169030**
Option 4 ID : **37135169029**
Status : **Answered**
Chosen Option : **1**

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Q.35 The equation of the directrix of the parabola $3x^2 = 16y$ is

Ans

1. $3y + 4 = 0$

2. $3x + 4 = 0$

3. $3y - 4 = 0$

4. $3x - 4 = 0$

Question Type : **MCQ**
Question ID : **37135117294**
Option 1 ID : **37135169174**
Option 2 ID : **37135169175**
Option 3 ID : **37135169173**
Option 4 ID : **37135169176**
Status : **Answered**
Chosen Option : **1**

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Q.36

If $x^2y^2 = \sin^{-1}\sqrt{x^2+y^2} + \cos^{-1}\sqrt{x^2+y^2}$, then $\frac{dy}{dx} =$

Ans

✔ 1. $\frac{-y}{x}$

✘ 2. $\frac{x}{y}$

✘ 3. $\frac{y}{x}$

✘ 4. $\frac{-x}{y}$

Question Type : **MCQ**
Question ID : **37135117295**
Option 1 ID : **37135169180**
Option 2 ID : **37135169177**
Option 3 ID : **37135169178**
Option 4 ID : **37135169179**
Status : **Answered**
Chosen Option : **1**

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Q.37 If the equation $3x^2 + 10xy + 3y^2 + 16y + k = 0$ represents a pair of lines , then the value of k is

Ans

✗ 1. -21

✗ 2. 21

✗ 3. 12

✓ 4. -12

Question Type : **MCQ**
Question ID : **37135117285**
Option 1 ID : **37135169140**
Option 2 ID : **37135169139**
Option 3 ID : **37135169137**
Option 4 ID : **37135169138**
Status : **Answered**
Chosen Option : **4**

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Q.38 The general solution of the differential equation $(1+y^2)+(x-e^{tan^{-1}y})\frac{dy}{dx}=0$ is

Ans

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

2. $e^{tan^{-1}y}=(e^{tan^{-1}x})^2+c$

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

4. $e^{tan^{-1}y}=(e^{tan^{-1}y})^2+c$

Question Type : **MCQ**
Question ID : **37135117273**
Option 1 ID : **37135169091**
Option 2 ID : **37135169092**
Option 3 ID : **37135169089**
Option 4 ID : **37135169090**
Status : **Answered**
Chosen Option : **3**

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Q.39 The maximum volume of a right circular cylinder if the sum of its radius and height is 6 m is

Ans

1. $16\pi\ m^3$

2. $32\pi\ m^3$

3. $4\pi\ m^3$

4. $64\pi\ m^3$

Question Type : **MCQ**
Question ID : **37135117254**
Option 1 ID : **37135169013**
Option 2 ID : **37135169015**
Option 3 ID : **37135169016**
Option 4 ID : **37135169014**
Status : **Answered**
Chosen Option : **2**

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Q.40 If the slopes of the lines given by the equation $ax^2 + 2hxy + by^2 = 0$ are in the ratio $5:3$, then the ratio $h^2 : ab =$

Ans

1. $5:3$

2. $16:15$

3. $3:5$

4. $15:16$

Question Type : **MCQ**
Question ID : **37135117276**
Option 1 ID : **37135169101**
Option 2 ID : **37135169102**
Option 3 ID : **37135169103**
Option 4 ID : **37135169104**
Status : **Answered**
Chosen Option : **2**

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Q.41 The L. P. P. to maximize $Z = x + y$, subject to $x + y \leq 1$, $2x + 2y \geq 6$, $x \geq 0$, $y \geq 0$

has

Ans

✔ 1. no solution.

✗ 2. infinite solutions.

✗ 3. one solution.

✗ 4. two solutions.

Question Type : **MCQ**
Question ID : **37135117288**
Option 1 ID : **37135169149**
Option 2 ID : **37135169152**
Option 3 ID : **37135169150**
Option 4 ID : **37135169151**
Status : **Answered**
Chosen Option : **1**

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Q.42

If $\bar{a}, \bar{b}, \bar{c}$ are non-coplanar vectors and $\bar{p} = \frac{\bar{b} \times \bar{c}}{[\bar{a}\ \bar{b}\ \bar{c}]}$, $\bar{q} = \frac{\bar{c} \times \bar{a}}{[\bar{a}\ \bar{b}\ \bar{c}]}$, $\bar{r} = \frac{\bar{a} \times \bar{b}}{[\bar{a}\ \bar{b}\ \bar{c}]}$,

then $\bar{a} \cdot \bar{p} + \bar{b} \cdot \bar{q} + \bar{c} \cdot \bar{r} =$

Ans

1. 2

2. 1

3. 0

4. 3

Question Type : **MCQ**
Question ID : **37135117274**
Option 1 ID : **37135169095**
Option 2 ID : **37135169094**
Option 3 ID : **37135169093**
Option 4 ID : **37135169096**
Status : **Answered**
Chosen Option : **4**

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Q.43 The negation of the statement pattern $\sim p \vee (q \rightarrow \sim r)$ is

Ans

1. $p \rightarrow (q \wedge \sim r)$

2. $p \vee (q \wedge r)$

3. $p \wedge (q \wedge r)$

4. $\sim p \wedge (q \wedge r)$

Question Type : **MCQ**
Question ID : **37135117266**
Option 1 ID : **37135169064**
Option 2 ID : **37135169062**
Option 3 ID : **37135169063**
Option 4 ID : **37135169061**
Status : **Answered**
Chosen Option : **3**

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Q.44

The statement pattern $p \wedge (q \vee \sim p)$ is equivalent to

Ans

1. $p \wedge q$

2. $p \rightarrow q$

3. $q \wedge \sim p$

4. $p \vee q$

Question Type :	**MCQ**
Question ID :	**37135117296**
Option 1 ID :	**37135169183**
Option 2 ID :	**37135169182**
Option 3 ID :	**37135169184**
Option 4 ID :	**37135169181**
Status :	**Answered**
Chosen Option :	**1**

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Q.45

If $f(x) = \frac{1-sinx+cosx}{1+sinx+cosx}$, for $x \neq \pi$ is continuous at $x = \pi$, then $f(\pi) =$

Ans

✔ 1. -1

✘ 2. 2

✘ 3. 0

✘ 4. 1

Question Type :	**MCQ**
Question ID :	**37135117297**
Option 1 ID :	**37135169186**
Option 2 ID :	**37135169188**
Option 3 ID :	**37135169187**
Option 4 ID :	**37135169185**
Status :	**Answered**
Chosen Option :	**1**

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Q.46 The point P lies on the line A B , where $A \equiv (2, 4, 5)$ and $B \equiv (1, 2, 3)$. If z co-ordinate of point P is 3 , the its y co-ordinate is

Ans

1. 2

2. -2

3. -3

4. 3

Question Type : **MCQ**
Question ID : **37135117269**
Option 1 ID : **37135169073**
Option 2 ID : **37135169075**
Option 3 ID : **37135169076**
Option 4 ID : **37135169074**
Status : **Answered**
Chosen Option : **3**

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Q.47 If X is a r. v. with c. d. f. $F(x)$ and its probability distribution is given by

$X = x$	$-1{\cdot}5$	$-0{\cdot}5$	$0{\cdot}5$	$1{\cdot}5$	$2{\cdot}5$
$P(X = x)$	0·05	0·2	0·15	0·25	0·35

then, $F(1{\cdot}5) - F(-0{\cdot}5) =$

Ans

✗ 1. 0·2

✗ 2. 0·3

✗ 3. 0·1

✓ 4. 0·4

Question Type : **MCQ**
Question ID : **37135117289**
Option 1 ID : **37135169154**
Option 2 ID : **37135169155**
Option 3 ID : **37135169153**
Option 4 ID : **37135169156**
Status : **Answered**
Chosen Option : **4**

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Q.48 The rate of disintegration of a radio active element at time t is proportional to its mass at that time. Then the time during which the original mass of 1·5gm. will disintegrate into its mass of 0·5gm. is proportional to

Ans

✗ 1. $log\ 4$

✗ 2. $log\ 5$

✓ 3. $log\ 3$

✗ 4. $log\ 2$

Question Type : **MCQ**
Question ID : **37135117277**
Option 1 ID : **37135169105**
Option 2 ID : **37135169107**
Option 3 ID : **37135169106**
Option 4 ID : **37135169108**
Status : **Answered**
Chosen Option : **3**

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Q.49 $\overline{a}$ and $\overline{b}$ are non-collinear vectors. If $\overline{p} = (2x+1)\overline{a} - \overline{b}$ and $\overline{q} = (x-2)\overline{a} + \overline{b}$ are collinear vectors, then $x =$

Ans

1. -3

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

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

4. 3

Question Type : **MCQ**
Question ID : **37135117262**
Option 1 ID : **37135169048**
Option 2 ID : **37135169045**
Option 3 ID : **37135169046**
Option 4 ID : **37135169047**
Status : **Answered**
Chosen Option : **2**

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Q.50 The equations of planes parallel to the plane $x + 2y + 2z + 8 = 0$, which are at a distance of 2 units from the point $(1, 1, 2)$ are

Ans

1. $x + 2y + 2z - 13 = 0$ or $x + 2y + 2z - 1 = 0$

2. $x + 2y + 2z - 6 = 0$ or $x + 2y + 2z - 7 = 0$

3. $x + 2y + 2z + 3 = 0$ or $x + 2y + 2z - 5 = 0$

4. $x + 2y + 2z - 5 = 0$ or $x + 2y + 2z - 3 = 0$

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Option 2 ID : **37135169059**
Option 3 ID : **37135169060**
Option 4 ID : **37135169058**
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