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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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Q.1 A particle starting from rest moves along the circumference of a circle of radius 'r' with angular acceleration 'α'. The magnitude of the average velocity, in the time it completes the small angular displacement 'θ' is

Ans

✗ 1. $r\left(\frac{2}{\alpha\theta}\right)^2$

✗ 2. $r\left(\frac{\alpha\theta}{2}\right)$

✗ 3. $r\left(\frac{\alpha\theta}{2}\right)^2$

✓ 4. $r\left(\frac{\alpha\theta}{2}\right)^{\frac{1}{2}}$

Question Type : **MCQ**
Question ID : **37135116867**
Option 1 ID : **37135167468**
Option 2 ID : **37135167466**
Option 3 ID : **37135167467**
Option 4 ID : **37135167465**
Status : **Answered**
Chosen Option : **4**

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Q.2

Two wires A and B are stretched by the same load. The radius of wire A is double the radius of wire B. The stress on the wire B as compared to the stress on the wire A is

Ans

1. twice.
2. four times.
3. half.
4. equal.

Question Type : **MCQ**
Question ID : **37135116861**
Option 1 ID : **37135167443**
Option 2 ID : **37135167444**
Option 3 ID : **37135167441**
Option 4 ID : **37135167442**
Status : **Answered**
Chosen Option : **2**

Q.3

When wavelength of light used in optical instruments A and B are 4500Å and 6000Å respectively, the ratio of resolving power of A to B will be

Ans

1. 16 : 9
2. 7 : 1
3. 9 : 16
4. 4 : 3

Question Type : **MCQ**
Question ID : **37135116857**
Option 1 ID : **37135167425**
Option 2 ID : **37135167428**
Option 3 ID : **37135167426**
Option 4 ID : **37135167427**
Status : **Answered**
Chosen Option : **3**

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Q.4

The ratio of radii of gyration of a ring to a disc (both circular) of same radii and mass, about a tangential axis perpendicular to the plane is

Ans

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

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

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

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

3

Question Type : **MCQ**
Question ID : **37135116874**
Option 1 ID : **37135167494**
Option 2 ID : **37135167493**
Option 3 ID : **37135167495**
Option 4 ID : **37135167496**
Status : **Answered**
Chosen Option : **1**

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Q.5

The work done in blowing a soap bubble of radius 'R' is 'W'. The work done in blowing a bubble of radius '2R' of the same soap solution is

Ans

✗ 1. $\frac{W}{4}$

✗ 2. $\frac{W}{2}$

✓ 3. $4W$

✗ 4. $2W$

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Question Type :	**MCQ**
Question ID :	**37135116882**
Option 1 ID :	**37135167525**
Option 2 ID :	**37135167526**
Option 3 ID :	**37135167528**
Option 4 ID :	**37135167527**
Status :	**Answered**
Chosen Option :	**3**

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Q.6

The light of wavelength 'λ' incident on the surface of metal having work function ϕ emits the electrons. The maximum velocity of electrons emitted is

(c = velocity of light, h = Planck's constant, m = mass of electron)

Ans

1. $\left[\frac{2(hc-\phi)}{m\lambda}\right]$

2. $\left[\frac{2(hc-\lambda\phi)}{m\lambda}\right]^{\frac{1}{2}}$

3. $\left[\frac{2(hc-\lambda)}{m\lambda}\right]^{\frac{1}{2}}$

4. $\left[\frac{2(h\nu-\phi)\lambda}{mc}\right]$

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Question Type : **MCQ**
Question ID : **37135116881**
Option 1 ID : **37135167523**
Option 2 ID : **37135167522**
Option 3 ID : **37135167521**
Option 4 ID : **37135167524**
Status : **Answered**
Chosen Option : **2**

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Q.7

A thin uniform rod has mass 'M' and length 'L'. The moment of inertia about an axis perpendicular to it and passing through the point at a distance $\frac{L}{3}$ from one of its ends, will be

Ans

1. ✗ $\frac{ML^2}{12}$

2. ✗ $\frac{7}{8}ML^2$

3. ✓ $\frac{ML^2}{9}$

4. ✗ $\frac{ML^2}{3}$

3

Question Type : **MCQ**
Question ID : **37135116865**
Option 1 ID : **37135167459**
Option 2 ID : **37135167457**
Option 3 ID : **37135167458**
Option 4 ID : **37135167460**
Status : **Answered**
Chosen Option : **3**

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Q.8 A thin light weight rod of diamagnetic substance such as silver is suspended in uniform external magnetic field. It will align itself with its length

Ans

✔ 1. perpendicular to magnetic field.

✗ 2. inclined at an angle 120° to magnetic field.

✗ 3. inclined at an angle 45° to magnetic field.

✗ 4. parallel to magnetic field.

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Question Type : **MCQ**
Question ID : **37135116886**
Option 1 ID : **37135167541**
Option 2 ID : **37135167543**
Option 3 ID : **37135167542**
Option 4 ID : **37135167544**
Status : **Answered**
Chosen Option : **1**

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Q.9

Two spherical black bodies of radius 'r_1' and 'r_2' with surface temperature 'T_1' and 'T_2' respectively, radiate same power, then $r_1 : r_2$ is

Ans

1. $\left(\frac{T_2}{T_1}\right)^2$

2. $\left(\frac{T_1}{T_2}\right)^4$

3. $\left(\frac{T_1}{T_2}\right)^2$

4. $\left(\frac{T_2}{T_1}\right)^4$



Question Type : **MCQ**
Question ID : **37135116854**
Option 1 ID : **37135167414**
Option 2 ID : **37135167415**
Option 3 ID : **37135167416**
Option 4 ID : **37135167413**
Status : **Answered**
Chosen Option : **1**

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Q.10 A body slides down a smooth inclined plane having angle 'θ' and reaches the bottom with velocity 'v'. If a body is a sphere then its linear velocity at the bottom of the plane is

Ans

✗ 1. $\sqrt{\frac{2}{7}}\,v$

✗ 2. $\sqrt{\frac{3}{7}}\,v$

✓ 3. $\sqrt{\frac{5}{7}}\,v$

✗ 4. $\sqrt{\frac{9}{7}}\,v$

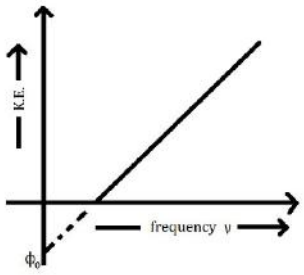
Question Type : **MCQ**
Question ID : **37135116895**
Option 1 ID : **37135167577**
Option 2 ID : **37135167578**
Option 3 ID : **37135167579**
Option 4 ID : **37135167580**
Status : **Answered**
Chosen Option : **3**

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Q.11

The graph of kinetic energy against the frequency (ν) of incident light is as shown in the figure. The slope of the graph and intercept on X axis respectively are



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Ans

1. Planck's constant, threshold frequency

2. work function, maximum K.E.

3. maximum K.E, threshold frequency

4. Planck's constant, work function

Question Type : **MCQ**
Question ID : **37135116877**
Option 1 ID : **37135167506**
Option 2 ID : **37135167508**
Option 3 ID : **37135167505**
Option 4 ID : **37135167507**
Status : **Answered**
Chosen Option : **1**

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Q.12 A simple pendulum of length 'ℓ' has a bob of mass 'm'. It executes S.H.M. of small amplitude 'A'. The maximum tension in the string is
(g = acceleration due to gravity)

Ans

✗ 1. $2\,mg$

✗ 2. mg

✗ 3. $mg\left(\frac{A}{\ell}+1\right)$

✓ 4. $mg\left(\frac{A^2}{\ell^2}+1\right)$

4

Question Type : **MCQ**
Question ID : **37135116856**
Option 1 ID : **37135167423**
Option 2 ID : **37135167421**
Option 3 ID : **37135167422**
Option 4 ID : **37135167424**
Status : **Answered**
Chosen Option : **1**

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Q.13 The magnetic susceptibility of a paramagnetic material at −73 °C is 0·0075. Its value at −173 °C will be

Ans

1. 0·0075
2. 0·0045
3. 0·0150
4. 0·0030

15

Question Type : **MCQ**
Question ID : **37135116862**
Option 1 ID : **37135167447**
Option 2 ID : **37135167446**
Option 3 ID : **37135167448**
Option 4 ID : **37135167445**
Status : **Answered**
Chosen Option : **3**

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Q.14 A light wave of wavelength 'λ' is incident on a slit of width 'd'. The resulting diffraction pattern is observed on a screen at a distance 'D'. If linear width of the principal maxima is equal to the width of the slit, then the distance 'D' is

Ans

✗ 1. $\frac{d}{\lambda}$

✗ 2. $\frac{2\lambda}{d}$

✓ 3. $\frac{d^2}{2\lambda}$

✗ 4. $\frac{2\lambda^2}{d}$

Question Type : **MCQ**
Question ID : **37135116879**
Option 1 ID : **37135167514**
Option 2 ID : **37135167516**
Option 3 ID : **37135167513**
Option 4 ID : **37135167515**
Status : **Answered**
Chosen Option : **3**

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Q.15

Which of the following instruments is 'NOT' a direct reading instrument?

Ans

1. Voltmeter

2. Ammeter

3. Electronic balance

4. Potentiometer

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Question Type : **MCQ**
Question ID : **37135116888**
Option 1 ID : **37135167549**
Option 2 ID : **37135167550**
Option 3 ID : **37135167551**
Option 4 ID : **37135167552**
Status : **Answered**
Chosen Option : **3**

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Q.16 A transistor has a voltage gain 'A'. If the amount 'βA' of its output is applied to the input of the transistor, then the transistor becomes oscillator when

Ans

✗ 1. $\beta = 0$

✓ 2. $\beta A = 1$

✗ 3. $\beta A = \infty$

✗ 4. $\beta A = 0$

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Question Type : **MCQ**
Question ID : **37135116864**
Option 1 ID : **37135167455**
Option 2 ID : **37135167454**
Option 3 ID : **37135167456**
Option 4 ID : **37135167453**
Status : **Answered**
Chosen Option : **2**

Q.17 An 'α' particle of energy 10 eV is moving in a circular path in uniform magnetic field. The energy of proton moving in the same path and same magnetic field will be [mass of 'α' particle = 4 times mass of proton]

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Ans

✗ 1. 4 eV

✗ 2. 8 eV

✗ 3. 16 eV

✓ 4. 10 eV

Question Type : **MCQ**
Question ID : **37135116899**
Option 1 ID : **37135167596**
Option 2 ID : **37135167595**
Option 3 ID : **37135167593**
Option 4 ID : **37135167594**
Status : **Answered**
Chosen Option : **4**

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Q.18

At absolute zero temperature, pure silicon behaves as

Ans

1. extrinsic semiconductor.

2. non-metal.

3. insulator.

4. metal.

19.

Question Type : **MCQ**
Question ID : **37135116898**
Option 1 ID : **37135167591**
Option 2 ID : **37135167590**
Option 3 ID : **37135167592**
Option 4 ID : **37135167589**
Status : **Answered**
Chosen Option : **3**

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Q.19 In conversion of moving coil galvanometer into an ammeter of required range, the resistance of ammeter so formed is

[s = shunt and G = resistance of galvanometer]

Ans

✗ 1. $\frac{S+G}{SG}$

✗ 2. $\frac{SG}{S-G}$

✓ 3. $\frac{SG}{S+G}$

✗ 4. $\frac{S-G}{SG}$

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Question Type : **MCQ**
Question ID : **37135116851**
Option 1 ID : **37135167403**
Option 2 ID : **37135167401**
Option 3 ID : **37135167402**
Option 4 ID : **37135167404**
Status : **Answered**
Chosen Option : **3**

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Q.20 A spherical rubber balloon carries a charge, uniformly distributed over the surface. As the balloon is blown up and increases in size, the total electric flux coming out of the surface

Ans

1. decreases.

2. remains unchanged.

3. increases.

4. becomes zero.

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Question Type : **MCQ**
Question ID : **37135116871**
Option 1 ID : **37135167483**
Option 2 ID : **37135167484**
Option 3 ID : **37135167482**
Option 4 ID : **37135167481**
Status : **Answered**
Chosen Option : **3**

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Q.21 A step-up transformer has 300 turns of primary winding and 450 turns of secondary winding. A primary is connected to 150 volt and the current flowing through it is 9A. The current and voltage in the secondary are

Ans

✗ 1. 13·5 A, 225 V

✗ 2. 13·5 A, 100 V

✗ 3. 4·5 A, 100 V

✓ 4. 6·0 A, 225 V

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Question Type : **MCQ**
Question ID : **37135116855**
Option 1 ID : **37135167419**
Option 2 ID : **37135167420**
Option 3 ID : **37135167417**
Option 4 ID : **37135167418**
Status : **Answered**
Chosen Option : **1**

Q.22 A diatomic gas undergoes adiabatic change. Its pressure 'P' and temperature 'T' are related as $P \propto T^x$, where x is

Ans

✗ 1. 3·0

✗ 2. 2·5

✓ 3. 3·5

✗ 4. 1·5

9.

Question Type : **MCQ**
Question ID : **37135116893**
Option 1 ID : **37135167571**
Option 2 ID : **37135167570**
Option 3 ID : **37135167572**
Option 4 ID : **37135167569**
Status : **Answered**
Chosen Option : **4**

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Q.23 An open organ pipe and a closed organ pipe have the frequency of their first overtone identical. The ratio of length of open pipe to that of closed pipe is

Ans

1. 3:4

2. 1:2

3. 2:1

4. 4:3

Question Type : **MCQ**
Question ID : **37135116870**
Option 1 ID : **37135167478**
Option 2 ID : **37135167477**
Option 3 ID : **37135167480**
Option 4 ID : **37135167479**
Status : **Answered**
Chosen Option : **3**

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Q.24 A radioactive nucleus emits 4α particles and 7β particles in succession. The ratio of number of neutrons to that of protons is [A = mass number, Z = atomic number]

Ans

✗ 1. $\frac{A-Z-13}{Z-2}$

✗ 2. $\frac{A-Z-13}{Z-1}$

✓ 3. $\frac{A-Z-15}{Z-1}$

✗ 4. $\frac{A-Z-11}{Z-2}$

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Question Type : **MCQ**
Question ID : **37135116869**
Option 1 ID : **37135167475**
Option 2 ID : **37135167473**
Option 3 ID : **37135167476**
Option 4 ID : **37135167474**
Status : **Answered**
Chosen Option : **3**

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Q.25

A ray of light travelling through glass of refractive index $\sqrt{2}$, is incident on glass – air boundary at an angle of incidence 45°. If refractive index of air is 1, then the angle of refraction will be

$\left[\sin 45° = \frac{1}{\sqrt{2}}, \quad \sin 90° = 1\right]$

Ans

1. 30°

2. 90°

3. 60°

4. 45°

10

Question Type : **MCQ**
Question ID : **37135116883**
Option 1 ID : **37135167529**
Option 2 ID : **37135167532**
Option 3 ID : **37135167531**
Option 4 ID : **37135167530**
Status : **Answered**
Chosen Option : **2**

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Q.26 A sonometer wire under suitable tension having specific gravity 'ϱ', vibrates with frequency 'n' in air. If the load is completely immersed in water the frequency of vibration of wire will become

Ans

1. $\left[\frac{\varrho-1}{n\varrho}\right]^{\frac{1}{2}}$

2. $n\left[\frac{\varrho}{\varrho-1}\right]^{\frac{1}{2}}$

3. $\left[\frac{n\varrho}{\varrho-1}\right]^{\frac{1}{2}}$

4. $n\left[\frac{\varrho-1}{\varrho}\right]^{\frac{1}{2}}$

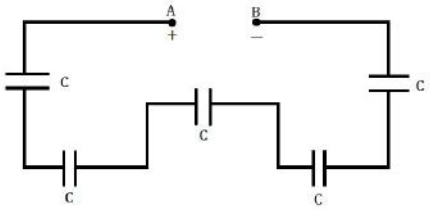
8

Question Type : **MCQ**
Question ID : **37135116897**
Option 1 ID : **37135167588**
Option 2 ID : **37135167585**
Option 3 ID : **37135167586**
Option 4 ID : **37135167587**
Status : **Answered**
Chosen Option : **2**

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Q.27 Five capacitors each of capacity 'C' are connected as shown in figure. If their resultant capacity is 2μF, then the capacity of each condenser is



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Ans

1. 2·5 μF

2. 2 μF

3. 10 μF

4. 5 μF

Question Type :	**MCQ**
Question ID :	**37135116866**
Option 1 ID :	**37135167462**
Option 2 ID :	**37135167461**
Option 3 ID :	**37135167464**
Option 4 ID :	**37135167463**
Status :	**Answered**
Chosen Option :	**1**

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Q.28 There are four convex lenses L_1, L_2, L_3 and L_4 of focal length 2, 4, 6 and 8 cm respectively. Two of these lenses form a telescope of length 10 cm and magnifying power 4. The objective and eye lenses are respectively

Ans

1. L_1, L_2

2. L_1, L_4

3. L_2, L_3

4. L_4, L_1

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Question Type : **MCQ**
Question ID : **37135116873**
Option 1 ID : **37135167491**
Option 2 ID : **37135167490**
Option 3 ID : **37135167489**
Option 4 ID : **37135167492**
Status : **Answered**
Chosen Option : **2**

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Q.29 A circular coil of radius 'R' is carrying a current 'I_1' in anticlockwise sense. A long straight wire is carrying current 'I_2' in the negative direction of x axis. Both are placed in the same plane and the distance between centre of coil and straight wire is 'd'. The magnetic field at the centre of coil will be zero for the value of 'd' equal to

Ans

27

1. $\frac{\pi}{R}\left(\frac{I_1}{I_2}\right)$

2. $\frac{\pi}{R}\left(\frac{I_2}{I_1}\right)$

3. $\frac{R}{\pi}\left(\frac{I_2}{I_1}\right)$

4. $\frac{R}{\pi}\left(\frac{I_1}{I_2}\right)$

Question Type : **MCQ**
Question ID : **37135116868**
Option 1 ID : **37135167471**
Option 2 ID : **37135167472**
Option 3 ID : **37135167470**
Option 4 ID : **37135167469**
Status : **Answered**
Chosen Option : **1**

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Q.30 Two wires of different materials have same length 'L' and same diameter 'd'. The second wire is connected at the end of the first wire and forms one single wire of double the length. This wire is subjected to stretching force 'F' to produce the elongation 'ℓ'. The two wires have

Ans

✗ 1.

same stress and same strain.

✗ 2.

different stress but same strain.

✗ 3.

different stress and different strain.

✓ 4.

same stress but different strain.

Question Type : **MCQ**
Question ID : **37135116891**
Option 1 ID : **37135167561**
Option 2 ID : **37135167564**
Option 3 ID : **37135167562**
Option 4 ID : **37135167563**
Status : **Answered**
Chosen Option : **4**

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Q.31

An obstacle is moving towards the source with velocity 'v'. The sound is reflected from the obstacle. If 'c' is the speed of sound and 'λ' is the wavelength, then the wavelength of the reflected wave (λ_r) is

Ans

1. $\lambda_r = \left(\frac{c-v}{c+v}\right)\lambda$

2. $\lambda_r = \left(\frac{c-v}{c}\right)\lambda$

3. $\lambda_r = \left(\frac{c+v}{c-v}\right)\lambda$

4. $\lambda_r = \left(\frac{c+v}{c}\right)\lambda$

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Question Type : **MCQ**
Question ID : **37135116900**
Option 1 ID : **37135167598**
Option 2 ID : **37135167600**
Option 3 ID : **37135167597**
Option 4 ID : **37135167599**
Status : **Answered**
Chosen Option : **1**

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Q.32 The length of solenoid is 'ℓ' whose windings are made of material of density 'D' and resistivity 'ϱ'. The winding resistance is 'R'. The inductance of solenoid is (m = mass of winding wire, μ_0 = permeability of free space)

Ans

1. $\frac{\mu_0}{2\pi\ell}\left(\frac{Rm}{\varrho D}\right)$

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2. $\frac{\mu_0}{4\pi\ell}\left(\frac{Rm}{\varrho D}\right)$

3. $\frac{\mu_0}{2\pi\ell}\left(\frac{\varrho D}{Rm}\right)$

4. $\frac{\mu_0}{4\pi\ell}\left(\frac{\varrho D}{Rm}\right)$

Question Type : **MCQ**
Question ID : **37135116875**
Option 1 ID : **37135167500**
Option 2 ID : **37135167499**
Option 3 ID : **37135167498**
Option 4 ID : **37135167497**
Status : **Answered**
Chosen Option : **1**

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Q.33 A block of mass 'm' attached to one end of the vertical spring produces extension 'x'. If the block is pulled and released, the periodic time of oscillation is

Ans

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

2. $2\pi\sqrt{\frac{x}{g}}$

3. $2\pi\sqrt{\frac{x}{2g}}$

4. $2\pi\sqrt{\frac{x}{4g}}$

Question Type : **MCQ**
Question ID : **37135116885**
Option 1 ID : **37135167537**
Option 2 ID : **37135167539**
Option 3 ID : **37135167538**
Option 4 ID : **37135167540**
Status : **Answered**
Chosen Option : **2**

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Q.34

Refractive index of the medium is 'μ' and wavelength is λ, then which of the following proportionality relation is correct?

Ans

✗ 1. $\mu \propto \frac{1}{\lambda^2}$

✗ 2. $\mu \propto \lambda^2$

✓ 3. $\mu \propto \frac{1}{\lambda}$

✗ 4. $\mu \propto \lambda$

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Question Type : **MCQ**
Question ID : **37135116890**
Option 1 ID : **37135167559**
Option 2 ID : **37135167560**
Option 3 ID : **37135167557**
Option 4 ID : **37135167558**
Status : **Answered**
Chosen Option : **3**

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Q.35

The ratio of energy required to raise a satellite of mass 'm' to a height 'h' above the earth's surface to that required to put it into the orbit at same height is [R = radius of the earth]

Ans

✗ 1. $\frac{h}{R}$

✗ 2. $\frac{4h}{R}$

✗ 3. $\frac{3h}{R}$

✓ 4. $\frac{2h}{R}$

2

Question Type : **MCQ**
Question ID : **37135116876**
Option 1 ID : **37135167503**
Option 2 ID : **37135167501**
Option 3 ID : **37135167502**
Option 4 ID : **37135167504**
Status : **Answered**
Chosen Option : **1**

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Q.36 In communication system, a repeater is used to extend the range of transmission.
It is the combination of

Ans
1. modulator and power amplifier.

2. receiver and transmitter.

3. IF stage and amplifier.

4. rectifier and detector.

Question Type : **MCQ**
Question ID : **37135116894**
Option 1 ID : **37135167576**
Option 2 ID : **37135167575**
Option 3 ID : **37135167574**
Option 4 ID : **37135167573**
Status : **Answered**
Chosen Option : **2**

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Q.37 The x, y components of vector $\vec{P}$ have magnitudes 1 and 3 and the x, y components of resultant of $\vec{P}$ and $\vec{Q}$ have magnitudes 5 and 6 respectively. What is the magnitude of $\vec{Q}$?

Ans

✗ 1. 4

✓ 2. 5

✗ 3. 3

✗ 4. 2

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Question Type : **MCQ**
Question ID : **37135116863**
Option 1 ID : **37135167451**
Option 2 ID : **37135167452**
Option 3 ID : **37135167450**
Option 4 ID : **37135167449**
Status : **Answered**
Chosen Option : **2**

Q.38 The ratio of energies of photons produced due to transition of electron of hydrogen atom from its (i) second to first energy level and (ii) highest energy level to 2nd level is respectively

Ans

✗ 1. 4 : 1

✗ 2. 2 : 1

✗ 3. 2·5 : 1

✓ 4. 3 : 1

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Question Type : **MCQ**
Question ID : **37135116884**
Option 1 ID : **37135167536**
Option 2 ID : **37135167533**
Option 3 ID : **37135167534**
Option 4 ID : **37135167535**
Status : **Answered**
Chosen Option : **1**

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Q.39 If the angle of dip at places A and B are 30° and 45° respectively, the ratio of horizontal component of earth's magnetic field at A to that at B will be

$\left[\sin 45° = \cos 45° = \frac{1}{\sqrt{2}}, \quad \sin\frac{\pi}{6} = \frac{1}{2}, \quad \cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}\right]$

Ans

✗ 1. $\sqrt{2} : 1$

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✗ 2. $1 : \sqrt{2}$

✗ 3. $\sqrt{2} : \sqrt{3}$

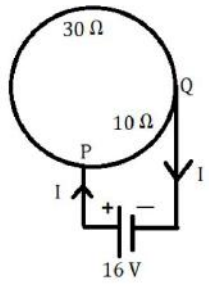
✓ 4. $\sqrt{3} : \sqrt{2}$

Question Type : **MCQ**
Question ID : **37135116853**
Option 1 ID : **37135167411**
Option 2 ID : **37135167412**
Option 3 ID : **37135167409**
Option 4 ID : **37135167410**
Status : **Answered**
Chosen Option : **4**

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Q.40 A circular coil of radius 'R' has a resistance of 40Ω. Figure shows two points 'P' and 'Q' on the circumference separated by a distance $\frac{\pi R}{2}$, which are connected to a 16 V battery with internal resistance of 0·5 Ω. What is the value of current 'I' flowing through the circuit?



13

Ans

✗ 1. 1 A

✗ 2. 0·5 A

✗ 3. 3 A

✓ 4. 2 A

Question Type : **MCQ**
Question ID : **37135116860**
Option 1 ID : **37135167439**
Option 2 ID : **37135167440**
Option 3 ID : **37135167437**
Option 4 ID : **37135167438**
Status : **Answered**
Chosen Option : **2**

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Q.41

When tension 'T' is applied to a sonometer wire of length 'ℓ', it vibrates with the fundamental frequency 'n'. Keeping the experimental setup same, when the tension is increased by 8 newton, the fundamental frequency becomes three times the earlier fundamental frequency (n). The initial tension applied to the wire in newton, was

Ans

1. 2·0
2. 0·5
3. 1·0
4. 2·5

8

Question Type : **MCQ**
Question ID : **37135116859**
Option 1 ID : **37135167435**
Option 2 ID : **37135167433**
Option 3 ID : **37135167434**
Option 4 ID : **37135167436**
Status : **Answered**
Chosen Option : **3**

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Q.42 The damping force of an oscillator is directly proportional to the velocity. The unit of constant of proportionality is

Ans

✗ 1. $kg\ m\ s^{-2}$

✓ 2. $kg\ s^{-1}$

✗ 3. $kg\ m\ s^{-1}$

✗ 4. $kg\ s$

4

Question Type : **MCQ**
Question ID : **37135116858**
Option 1 ID : **37135167430**
Option 2 ID : **37135167431**
Option 3 ID : **37135167429**
Option 4 ID : **37135167432**
Status : **Answered**
Chosen Option : **2**

Q.43 As we go from the equator of the earth to pole of the earth, the value of acceleration due to gravity

Ans

✗ 1. decreases.

2

✗ 2. remains same.

✗ 3. decreases up to latitude of 45° and increases thereafter.

✓ 4. increases.

Question Type : **MCQ**
Question ID : **37135116852**
Option 1 ID : **37135167406**
Option 2 ID : **37135167405**
Option 3 ID : **37135167407**
Option 4 ID : **37135167408**
Status : **Answered**
Chosen Option : **4**

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Q.44

A batsman hits a ball of mass 0·2 kg straight towards the bowler without changing its initial speed of 6 m/s. What is the impulse imparted to the ball?

Ans

1. 2·4 Ns

2. 1·6 Ns

3. 4 Ns

4. 3·2 Ns

23

Question Type : **MCQ**
Question ID : **37135116896**
Option 1 ID : **37135167582**
Option 2 ID : **37135167581**
Option 3 ID : **37135167584**
Option 4 ID : **37135167583**
Status : **Answered**
Chosen Option : **1**

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Q.45

A particle performs simple harmonic motion with period of 3 second. The time taken by it to cover a distance equal to half the amplitude from mean position is [sin 30° = 0·5]

Ans

✔ 1. $\frac{1}{4}$ s

✘ 2. $\frac{3}{4}$ s

✘ 3. $\frac{3}{2}$ s

✘ 4. $\frac{1}{2}$ s

4

Question Type : **MCQ**
Question ID : **37135116880**
Option 1 ID : **37135167519**
Option 2 ID : **37135167520**
Option 3 ID : **37135167517**
Option 4 ID : **37135167518**
Status : **Answered**
Chosen Option : **1**

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Q.46 A square frame of each side 'L' is dipped in a soap solution and taken out. The force acting on the film formed is (T = surface tension of soap solution)

Ans

1. $2\ TL$

2. $8\ TL$

3. $12\ TL$

4. $R = (R_1^3 + R_2^3)^{\frac{1}{3}}$

6

Question Type : **MCQ**
Question ID : **37135116872**
Option 1 ID : **37135167488**
Option 2 ID : **37135167486**
Option 3 ID : **37135167485**
Option 4 ID : **37135167487**
Status : **Answered**
Chosen Option : **2**

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Q.47 A large open tank containing water has two holes to its wall. A square hole of side 'a' is made at a depth 'y' and a circular hole of radius 'r' is made at a depth '16y' from the surface of water. If equal amount of water comes out through both the holes per second, then the relation between 'r' and 'a' will be

Ans

1. $r = \frac{2a}{\pi}$

2. $r = \frac{a}{2\sqrt{\pi}}$

3. $r = \frac{a}{2\pi}$

4. $r = \frac{2a}{\sqrt{\pi}}$

24

Question Type : **MCQ**
Question ID : **37135116887**
Option 1 ID : **37135167548**
Option 2 ID : **37135167546**
Option 3 ID : **37135167547**
Option 4 ID : **37135167545**
Status : **Answered**
Chosen Option : **4**

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Q.48 A particle of mass 'm' is performing U.C.M. along a circle of radius 'r'. The relation between centripetal acceleration 'a' and kinetic energy 'E' is given by

Ans

1. $a = \frac{2E}{mr}$

2. $a = \left(\frac{2E}{mr}\right)^2$

3. $a = \frac{E}{mr}$

4. $a = 2\,Em$

Question Type : **MCQ**
Question ID : **37135116889**
Option 1 ID : **37135167555**
Option 2 ID : **37135167553**
Option 3 ID : **37135167554**
Option 4 ID : **37135167556**
Status : **Answered**
Chosen Option : **1**

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Q.49 A block of mass 'M' is moving on rough horizontal surface with momentum 'P'. The coefficient of friction between the block and surface is 'μ'. The distance covered by block before it stops is [g = acceleration due to gravity]

Ans

✗ 1. $\frac{2\mu Mg}{P}$

✗ 2. $\frac{P}{2\mu Mg}$

✓ 3. $\frac{P^2}{2\mu M^2 g}$

✗ 4. $\frac{2\mu M^2 g}{P^2}$

24

Question Type : **MCQ**
Question ID : **37135116892**
Option 1 ID : **37135167567**
Option 2 ID : **37135167566**
Option 3 ID : **37135167565**
Option 4 ID : **37135167568**
Status : **Answered**
Chosen Option : **3**

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Q.50 The resultant of two vectors $\vec{A}$ and $\vec{B}$ is $\vec{C}$. If the magnitude of $\vec{B}$ is doubled, the new resultant vector becomes perpendicular to $\vec{A}$. Then the magnitude of $\vec{C}$ is

Ans

✗ 1. 3B

✗ 2. 2B

✓ 3. B

✗ 4. 4B

22

Question Type : **MCQ**
Question ID : **37135116878**
Option 1 ID : **37135167511**
Option 2 ID : **37135167510**
Option 3 ID : **37135167509**
Option 4 ID : **37135167512**
Status : **Answered**
Chosen Option : **2**

Section : **Chemistry**

Q.1 Which of the following elements belongs to first inner transition series ?

Ans

✗ 1. Bk

✗ 2. Pu

✓ 3. Pr

✗ 4. Fm

Question Type : **MCQ**
Question ID : **37135116945**
Option 1 ID : **37135167780**
Option 2 ID : **37135167777**
Option 3 ID : **37135167779**
Option 4 ID : **37135167778**
Status : **Answered**
Chosen Option : **2**

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Q.2 A solution of $CuSO_4$ is electrolysed using a current of 1·5 amperes for 10 minutes. What mass of Cu is deposited at cathode ? (At. mass of Cu = 63·7)

Ans

✗ 1. 0·395 g

✗ 2. 0·150 g

✗ 3. 0·637 g

✓ 4. 0·297 g

Question Type : **MCQ**
Question ID : **37135116942**
Option 1 ID : **37135167767**
Option 2 ID : **37135167765**
Option 3 ID : **37135167768**
Option 4 ID : **37135167766**
Status : **Answered**
Chosen Option : **1**

Q.3 What is IUPAC name of hydroquinone ?

Ans

✓ 1. Benzene −1, 4−diol

✗ 2. Benzene −1, 3, 5−triol

✗ 3. Benzene −1, 2−diol

✗ 4. Benzene −1, 2, 4−triol

Question Type : **MCQ**
Question ID : **37135116904**
Option 1 ID : **37135167614**
Option 2 ID : **37135167615**
Option 3 ID : **37135167613**
Option 4 ID : **37135167616**
Status : **Answered**
Chosen Option : **4**

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Q.4 Which of the following is multimolecular colloid ?

Ans

✔ 1. Silver sol

✘ 2. Solution of rubber in organic solvent

✘ 3. Aqueous solution of protein

✘ 4. Aqueous polyvinyl alcohol

Question Type : **MCQ**
Question ID : **37135116907**
Option 1 ID : **37135167628**
Option 2 ID : **37135167627**
Option 3 ID : **37135167625**
Option 4 ID : **37135167626**
Status : **Answered**
Chosen Option : **3**

Q.5 Equilibrium constant for a reaction is 20. What is the value of ΔG° at 300 K ? ($R = 8 \times 10^{-3}$ kJ)

Ans

✘ 1. $-5{\cdot}527\ \text{kJ mol}^{-1}$

✔ 2. $-1{\cdot}663\ \text{kJ mol}^{-1}$

✘ 3. $16{\cdot}63\ \text{kJ mol}^{-1}$

✘ 4. $-2{\cdot}763\ \text{kJ mol}^{-1}$

Question Type : **MCQ**
Question ID : **37135116903**
Option 1 ID : **37135167610**
Option 2 ID : **37135167612**
Option 3 ID : **37135167611**
Option 4 ID : **37135167609**
Status : **Answered**
Chosen Option : **1**

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Q.6 What is osmotic pressure of a semi molar solution at 27°C ? (R=0·082)

Ans

✗ 1. 4·96 atm

✗ 2. 2·46 atm

✗ 3. 20·5 atm

✓ 4. 12·3 atm

Question Type : **MCQ**
Question ID : **37135116933**
Option 1 ID : **37135167730**
Option 2 ID : **37135167729**
Option 3 ID : **37135167732**
Option 4 ID : **37135167731**
Status : **Answered**
Chosen Option : **4**

Q.7 Identify the process of refining to obtain pig tin

Ans

✓ 1. Liquation

✗ 2. Mond process

✗ 3. van Arkel

✗ 4. Polling

Question Type : **MCQ**
Question ID : **37135116943**
Option 1 ID : **37135167771**
Option 2 ID : **37135167770**
Option 3 ID : **37135167769**
Option 4 ID : **37135167772**
Status : **Answered**
Chosen Option : **1**

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Q.8 Which of the following actinoids exhibits only +3 oxidation state ?

Ans

✔ 1. $Lr\ (z = 103)$

✘ 2. $U\ (z = 92)$

✘ 3. $Th\ (z = 90)$

✘ 4. $Pa\ (z = 91)$

Question Type : **MCQ**
Question ID : **37135116949**
Option 1 ID : **37135167796**
Option 2 ID : **37135167794**
Option 3 ID : **37135167793**
Option 4 ID : **37135167795**
Status : **Answered**
Chosen Option : **1**

Q.9 60 g CH_3COOH dissolved in 1 dm^3 solvent, what is molality of solution ? (density = 1·25 g/cm^3)

Ans

✔ 1. 0·8 m

✘ 2. 0·4 m

✘ 3. 0·2 m

✘ 4. 0·6 m

Question Type : **MCQ**
Question ID : **37135116923**
Option 1 ID : **37135167692**
Option 2 ID : **37135167690**
Option 3 ID : **37135167689**
Option 4 ID : **37135167691**
Status : **Answered**
Chosen Option : **1**

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Q.10 A first order reaction has a rate constant $0{\cdot}00813\ min^{-1}$. How long will it take for 60% completion ?

Ans

1. $98{\cdot}7$ min
2. $56{\cdot}35$ min
3. $112{\cdot}7$ min
4. $62{\cdot}77$ min

Question Type : **MCQ**
Question ID : **37135116913**
Option 1 ID : **37135167652**
Option 2 ID : **37135167649**
Option 3 ID : **37135167651**
Option 4 ID : **37135167650**
Status : **Answered**
Chosen Option : **3**

Q.11 Which among the following is used as an oxidizing agent to bleach wood pulp into white paper ?

Ans

1. $Mn(OH)_2$
2. Cl_2
3. H_2O_2
4. $NaOCl$

Question Type : **MCQ**
Question ID : **37135116924**
Option 1 ID : **37135167693**
Option 2 ID : **37135167695**
Option 3 ID : **37135167696**
Option 4 ID : **37135167694**
Status : **Answered**
Chosen Option : **2**

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Q.12 If entropy of a solid is greater than zero, at T=0, it is called

Ans

✗ 1. standard entropy

✓ 2. residual entropy

✗ 3. formal entropy

✗ 4. absolute entropy

Question Type : **MCQ**
Question ID : **37135116944**
Option 1 ID : **37135167774**
Option 2 ID : **37135167773**
Option 3 ID : **37135167776**
Option 4 ID : **37135167775**
Status : **Answered**
Chosen Option : **2**

Q.13 Propane nitrile on reaction with ethyl magnesium iodide in presence of dry ether gives complex. This imine complex on acid hydrolysis forms

Ans

✗ 1. 2–Pentanone

✗ 2. Butanone

✗ 3. Propanone

✓ 4. 3–Pentanone

Question Type : **MCQ**
Question ID : **37135116931**
Option 1 ID : **37135167723**
Option 2 ID : **37135167722**
Option 3 ID : **37135167721**
Option 4 ID : **37135167724**
Status : **Answered**
Chosen Option : **4**

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Q.14 Which of the following metals is refined by vapour phase refining in Mond process ?

Ans

✗ 1. Zn

✗ 2. Si

✓ 3. Ni

✗ 4. Zr

Question Type : **MCQ**
Question ID : **37135116902**
Option 1 ID : **37135167608**
Option 2 ID : **37135167607**
Option 3 ID : **37135167606**
Option 4 ID : **37135167605**
Status : **Answered**
Chosen Option : **3**

Q.15 Which of the following reaction proves the chlorinating property of phosphorus pentachloride ?

Ans ✗ 1.

$$PCl_5 + H_2O \longrightarrow POCl_3 + 2HCl$$

✗ 2.

$$P_4 + 10\ Cl_2 \longrightarrow 4\ PCl_5$$

✗ 3. $PCl_5 \longrightarrow PCl_3 + Cl_2$

✓ 4.

$$2\ PCl_5 + Sn \longrightarrow SnCl_4 + 2PCl_3$$

Question Type : **MCQ**
Question ID : **37135116912**
Option 1 ID : **37135167647**
Option 2 ID : **37135167645**
Option 3 ID : **37135167648**
Option 4 ID : **37135167646**
Status : **Answered**
Chosen Option : **4**

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Q.16 What is the number of =N–OH groups present in dimethyl glyoximato ?

Ans

✗ 1. 3

✗ 2. 4

✗ 3. 1

✔ 4. 2

Question Type : **MCQ**
Question ID : **37135116948**
Option 1 ID : **37135167791**
Option 2 ID : **37135167792**
Option 3 ID : **37135167789**
Option 4 ID : **37135167790**
Status : **Answered**
Chosen Option : **4**

Q.17 An element crystallises in a bcc lattice with cell edge of 500 pm. The density of the element is $7{\cdot}5\ g\ cm^{-3}$. How many atoms are present in 300 g of metal ?

Ans

✗ 1. $12{\cdot}8 \times 10^{23}$ atoms

✔ 2. $6{\cdot}4 \times 10^{23}$ atoms

✗ 3. $3{\cdot}2 \times 10^{23}$ atoms

✗ 4. $1{\cdot}6 \times 10^{23}$ atoms

Question Type : **MCQ**
Question ID : **37135116935**
Option 1 ID : **37135167740**
Option 2 ID : **37135167739**
Option 3 ID : **37135167738**
Option 4 ID : **37135167737**
Status : **Answered**
Chosen Option : **2**

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Q.18 Which among the following carbocation is most reactive ?

Ans

✗ 1. $(CH_3)_3\,C^+$

✗ 2. $(CH_3)_2\,CH^+$

✓ 3. CH_3^+

✗ 4. $CH_3 - CH_2^+$

Question Type : **MCQ**
Question ID : **37135116922**
Option 1 ID : **37135167688**
Option 2 ID : **37135167687**
Option 3 ID : **37135167685**
Option 4 ID : **37135167686**
Status : **Answered**
Chosen Option : **1**

Q.19 In gas phase H–O–O–H bond angle in H_2O_2 is

Ans

✗ 1. $111{\cdot}5^\circ$

✓ 2. $94{\cdot}8^\circ$

✗ 3. $98{\cdot}4^\circ$

✗ 4. $147{\cdot}5^\circ$

Question Type : **MCQ**
Question ID : **37135116915**
Option 1 ID : **37135167657**
Option 2 ID : **37135167660**
Option 3 ID : **37135167659**
Option 4 ID : **37135167658**
Status : **Answered**
Chosen Option : **2**

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Q.20 If resistivity of 0·8 M KCl solution is $2{\cdot}5 \times 10^{-3}\ \Omega$ cm. Calculate molar conductivity of solution ?

Ans

✗ 1. $3 \times 10^5\ \Omega^{-1}cm^2mol^{-1}$

✗ 2. $2 \times 10^5\ \Omega^{-1}cm^2mol^{-1}$

✗ 3. $4 \times 10^5\ \Omega^{-1}cm^2mol^{-1}$

✓ 4. $5 \times 10^5\ \Omega^{-1}cm^2mol^{-1}$

Question Type : **MCQ**
Question ID : **37135116950**
Option 1 ID : **37135167797**
Option 2 ID : **37135167799**
Option 3 ID : **37135167800**
Option 4 ID : **37135167798**
Status : **Answered**
Chosen Option : **4**

Q.21 Which among the following compound is NOT optically active ?

Ans

✓ 1. 3 – Chloropentane

✗ 2. 2 – Chloropentane

✗ 3. 2 – Chloro – 3 – methyl pentane

✗ 4. 3 – Chloro – 2 – methyl pentane

Question Type : **MCQ**
Question ID : **37135116914**
Option 1 ID : **37135167654**
Option 2 ID : **37135167653**
Option 3 ID : **37135167655**
Option 4 ID : **37135167656**
Status : **Answered**
Chosen Option : **1**

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Q.22 Which of the following benzylic alcohol is tertiary alcohol ?

Ans

✗ 1. Phenyl methanol

✗ 2. 1– phenyl ethanol

✓ 3. 2– phenyl propan–2–ol

✗ 4. 1– phenyl propan–2–ol

Question Type : **MCQ**
Question ID : **37135116917**
Option 1 ID : **37135167665**
Option 2 ID : **37135167666**
Option 3 ID : **37135167668**
Option 4 ID : **37135167667**
Status : **Answered**
Chosen Option : **3**

Q.23 Which of the following pairs of aryl halides can NOT be prepared directly by electrophilic substitution ?

Ans

✗ 1. Aryl bromide and aryl iodide

✗ 2. Aryl chloride and aryl bromide

✗ 3. Aryl fluoride and aryl chloride

✓ 4. Aryl iodide and aryl fluoride

Question Type : **MCQ**
Question ID : **37135116936**
Option 1 ID : **37135167742**
Option 2 ID : **37135167741**
Option 3 ID : **37135167743**
Option 4 ID : **37135167744**
Status : **Answered**
Chosen Option : **4**

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Q.24 Solutions A, B, C and D are respectively 0·2 M urea, 0·10 M NaCl, 0·05 M $BaCl_2$ and 0·05 M $AlCl_3$.
All solutions are isotonic with each other except

Ans
1. B
2. A
3. D
4. C

Question Type : **MCQ**
Question ID : **37135116939**
Option 1 ID : **37135167754**
Option 2 ID : **37135167753**
Option 3 ID : **37135167756**
Option 4 ID : **37135167755**
Status : **Answered**
Chosen Option : **2**

Q.25 Which of the following formula represents lithium imide ?

Ans
1. Li_3N
2. $LiNH_2$
3. Li_2NH
4. LiNH

Question Type : **MCQ**
Question ID : **37135116934**
Option 1 ID : **37135167735**
Option 2 ID : **37135167733**
Option 3 ID : **37135167736**
Option 4 ID : **37135167734**
Status : **Answered**
Chosen Option : **3**

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Q.26 Which of the following is NOT dihydric phenol ?

Ans

✔ 1. α – naphthol

✘ 2. Resorcinol

✘ 3. Hydroquinone

✘ 4. Catechol

Question Type : **MCQ**
Question ID : **37135116909**
Option 1 ID : **37135167636**
Option 2 ID : **37135167635**
Option 3 ID : **37135167634**
Option 4 ID : **37135167633**
Status : **Answered**
Chosen Option : **1**

Q.27 Which of the following molecule does not contain oxygen ?

Ans

✘ 1. Serotonin

✔ 2. Phenelzine

✘ 3. Veronal

✘ 4. Iproniazid

Question Type : **MCQ**
Question ID : **37135116932**
Option 1 ID : **37135167727**
Option 2 ID : **37135167725**
Option 3 ID : **37135167728**
Option 4 ID : **37135167726**
Status : **Answered**
Chosen Option : **2**

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Q.28 Which of the following properties is of the thermosetting polymers ?

Ans
✔ 1. These are cross linked polymers

✘ 2. These can be remoulded

✘ 3. These can be recycled

✘ 4. On heating these become soft

Question Type : **MCQ**
Question ID : **37135116919**
Option 1 ID : **37135167673**
Option 2 ID : **37135167675**
Option 3 ID : **37135167676**
Option 4 ID : **37135167674**
Status : **Answered**
Chosen Option : **1**

Q.29 In which of the following compounds intra molecular hydrogen bonding is present ?

Ans
✘ 1. ethanol

✔ 2. o– nitrophenol

✘ 3. water

✘ 4. ammonia

Question Type : **MCQ**
Question ID : **37135116938**
Option 1 ID : **37135167751**
Option 2 ID : **37135167750**
Option 3 ID : **37135167752**
Option 4 ID : **37135167749**
Status : **Answered**
Chosen Option : **2**

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Q.30 Which of the following compounds does NOT contain >C=O group?

Ans

✔ 1. Ether

✘ 2. Ester

✘ 3. Amide

✘ 4. Acyl halide

Question Type : **MCQ**
Question ID : **37135116941**
Option 1 ID : **37135167763**
Option 2 ID : **37135167764**
Option 3 ID : **37135167762**
Option 4 ID : **37135167761**
Status : **Answered**
Chosen Option : **1**

Q.31 Silver crystallises in fcc structure, if edge length of unit cell is 316·5 pm. What is the radius of silver atom ?

Ans

✘ 1. 137·04 pm

✔ 2. 111·91 pm

✘ 3. 121·91 pm

✘ 4. 158·25 pm

Question Type : **MCQ**
Question ID : **37135116927**
Option 1 ID : **37135167707**
Option 2 ID : **37135167705**
Option 3 ID : **37135167706**
Option 4 ID : **37135167708**
Status : **Answered**
Chosen Option : **2**

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Q.32 Which polymer from following is used as synthetic leather ?

Ans

1. Bakelite

2. PVC

3. Polystyrene

4. Polythene

Question Type : **MCQ**
Question ID : **37135116911**
Option 1 ID : **37135167643**
Option 2 ID : **37135167644**
Option 3 ID : **37135167642**
Option 4 ID : **37135167641**
Status : **Answered**
Chosen Option : **3**

Q.33 Which of the following is NOT a character of ideal drug ?

Ans

1. Should destroy harmful organisms

2. Should not disturb physiological process

3. Hamrless to host

4. Is not localised to affected site

Question Type : **MCQ**
Question ID : **37135116946**
Option 1 ID : **37135167783**
Option 2 ID : **37135167781**
Option 3 ID : **37135167782**
Option 4 ID : **37135167784**
Status : **Answered**
Chosen Option : **3**

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Q.34 An acylchloride is hydrogenated over catalyst palladium on barium sulphate to form an aldehyde. This reaction is called as

Ans

✗ 1. Stephen reaction

✓ 2. Rosenmund reduction

✗ 3. Etard reaction

✗ 4. Wolff– Kishner reduction

Question Type : **MCQ**
Question ID : **37135116925**
Option 1 ID : **37135167698**
Option 2 ID : **37135167697**
Option 3 ID : **37135167699**
Option 4 ID : **37135167700**
Status : **Answered**
Chosen Option : **2**

Q.35 An element has a bcc structure with cell edge of 288 pm. The density of element is $7{\cdot}2\ g\ cm^{-3}$. What is the atomic mass of an element ?

Ans

✓ 1. 51·78

✗ 2. 25·89

✗ 3. 62·43

✗ 4. 77·68

Question Type : **MCQ**
Question ID : **37135116906**
Option 1 ID : **37135167622**
Option 2 ID : **37135167621**
Option 3 ID : **37135167623**
Option 4 ID : **37135167624**
Status : **Answered**
Chosen Option : **3**

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Q.36 Work done when 2 mol of an ideal gas is compressed from a volume of $5m^3$ to $2{\cdot}5m^3$ at 300 K, under a pressure of 100 k pa is

Ans

✔ 1. 497·5 kJ

✘ 2. 99·50 kJ

✘ 3. 248·7 kJ

✘ 4. 49·75 kJ

Question Type : **MCQ**
Question ID : **37135116908**
Option 1 ID : **37135167630**
Option 2 ID : **37135167632**
Option 3 ID : **37135167631**
Option 4 ID : **37135167629**
Status : **Answered**
Chosen Option : **3**

Q.37 What is the secondary valence of Co^{3+} ion according to Werner's theory in $[Co(NH_3)_4Cl_2]^+$?

Ans

✘ 1. 5

✘ 2. 4

✘ 3. 3

✔ 4. 6

Question Type : **MCQ**
Question ID : **37135116940**
Option 1 ID : **37135167759**
Option 2 ID : **37135167758**
Option 3 ID : **37135167757**
Option 4 ID : **37135167760**
Status : **Answered**
Chosen Option : **4**

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Q.38 What is the value of rate constant of first order reaction, if it takes 15 minutes for consumption of 20% of reactants ?

Ans

✗ 1. $1{\cdot}84 \times 10^{-2}\ \text{min}^{-1}$

✗ 2. $1{\cdot}38 \times 10^{-2}\ \text{min}^{-1}$

✗ 3. $1{\cdot}07 \times 10^{-2}\ \text{min}^{-1}$

✓ 4. $1{\cdot}48 \times 10^{-2}\ \text{min}^{-1}$

Question Type : **MCQ**
Question ID : **37135116920**
Option 1 ID : **37135167680**
Option 2 ID : **37135167678**
Option 3 ID : **37135167677**
Option 4 ID : **37135167679**
Status : **Answered**
Chosen Option : **3**

Q.39 What is correct order of C–X bond strength in CH_3-X ?

Ans

✓ 1. $CH_3F > CH_3Cl > CH_3Br > CH_3I$

✗ 2. $CH_3F > CH_3Br > CH_3Cl > CH_3I$

✗ 3. $CH_3CI > CH_3Br > CH_3I > CH_3F$

✗ 4. $CH_3I > CH_3Br > CH_3Cl > CH_3F$

Question Type : **MCQ**
Question ID : **37135116901**
Option 1 ID : **37135167604**
Option 2 ID : **37135167602**
Option 3 ID : **37135167603**
Option 4 ID : **37135167601**
Status : **Answered**
Chosen Option : **1**

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Q.40 Number of oxygen atoms present in salicylaldehyde are

Ans

1. 3
2. 1
3. 2
4. 4

Question Type : **MCQ**
Question ID : **37135116930**
Option 1 ID : **37135167717**
Option 2 ID : **37135167720**
Option 3 ID : **37135167719**
Option 4 ID : **37135167718**
Status : **Answered**
Chosen Option : **3**

Q.41 Identify compound 'B' in following series of reactions ?

$$\text{Acetonitrile} \xrightarrow{\text{Na/alcohol}} \text{A} \xrightarrow{\text{NaNO}_2/\text{dil.HCl}} \text{B}$$

Ans

1. Nitroethane
2. Ethyl chloride
3. Ethyl alcohol
4. Ethyl amine

Question Type : **MCQ**
Question ID : **37135116905**
Option 1 ID : **37135167620**
Option 2 ID : **37135167618**
Option 3 ID : **37135167619**
Option 4 ID : **37135167617**
Status : **Answered**
Chosen Option : **1**

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Q.42 How many numbers of P–OH and P–O–P bonds are present in pyrophosphoric acid respectively?

Ans

1. 3, 1
2. 4, 1
3. 4, 3
4. 3, 3

Question Type : **MCQ**
Question ID : **37135116916**
Option 1 ID : **37135167661**
Option 2 ID : **37135167662**
Option 3 ID : **37135167664**
Option 4 ID : **37135167663**
Status : **Answered**
Chosen Option : **2**

Q.43 The common name of 1–Chloro –2, 2–dimethyl propane is

Ans

1. neo–pentyl chloride
2. isopropyl chloride
3. n–pentyl chloride
4. isopentyl chloride

Question Type : **MCQ**
Question ID : **37135116929**
Option 1 ID : **37135167716**
Option 2 ID : **37135167713**
Option 3 ID : **37135167714**
Option 4 ID : **37135167715**
Status : **Answered**
Chosen Option : **1**

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Q.44 Identify the hydrocarbon compound from following containing carbon atoms in the range of C_6 to C_8 ?

Ans

✗ 1. Waxes

✓ 2. Petrol

✗ 3. Diesel

✗ 4. CNG

Question Type : **MCQ**
Question ID : **37135116910**
Option 1 ID : **37135167640**
Option 2 ID : **37135167638**
Option 3 ID : **37135167637**
Option 4 ID : **37135167639**
Status : **Answered**
Chosen Option : **1**

Q.45 If 2 moles of an ideal gas at 546 K has volume of 44·8 L, then what will be it's pressure ? (R =0·082)

Ans

✓ 1. 1·998 atm

✗ 2. 1·098 atm

✗ 3. 2·408 atm

✗ 4. 3·129 atm

Question Type : **MCQ**
Question ID : **37135116918**
Option 1 ID : **37135167670**
Option 2 ID : **37135167669**
Option 3 ID : **37135167671**
Option 4 ID : **37135167672**
Status : **Answered**
Chosen Option : **1**

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Q.46 Which of the following reaction of diazonium salt involves retention of diazonium group ?

Ans

✔ 1. Reaction with phenol

✘ 2. Reaction with phosphinic acid

✘ 3. Reaction with dilute sulphuric acid

✘ 4. Reaction with HCl and Cu powder

Question Type : **MCQ**
Question ID : **37135116928**
Option 1 ID : **37135167711**
Option 2 ID : **37135167710**
Option 3 ID : **37135167712**
Option 4 ID : **37135167709**
Status : **Answered**
Chosen Option : **1**

Q.47 Which of the following is obtained by catalytic oxidation of ammonia ?

Ans

✘ 1. N_2O

✔ 2. NO

✘ 3. HNO_2

✘ 4. NO_2

Question Type : **MCQ**
Question ID : **37135116921**
Option 1 ID : **37135167683**
Option 2 ID : **37135167682**
Option 3 ID : **37135167681**
Option 4 ID : **37135167684**
Status : **Answered**
Chosen Option : **2**

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Q.48 The volume of oxygen required for complete combustion of 0·25 mole of methane at S.T.P. is

Ans

✗ 1. $5{\cdot}6\ dm^3$

✗ 2. $7{\cdot}46\ dm^3$

✗ 3. $22{\cdot}4\ dm^3$

✓ 4. $11{\cdot}2\ dm^3$

Question Type : **MCQ**
Question ID : **37135116937**
Option 1 ID : **37135167745**
Option 2 ID : **37135167746**
Option 3 ID : **37135167748**
Option 4 ID : **37135167747**
Status : **Answered**
Chosen Option : **1**

Q.49 What is the product obtained when Br_2 water reacts with glucose ?

Ans

✓ 1. Gluconic acid

✗ 2. Saccharic acid

✗ 3. 1, 6– dibromo glucose

✗ 4. Bromohexane

Question Type : **MCQ**
Question ID : **37135116947**
Option 1 ID : **37135167787**
Option 2 ID : **37135167788**
Option 3 ID : **37135167786**
Option 4 ID : **37135167785**
Status : **Answered**
Chosen Option : **3**

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Q.50 Which among the following compounds is obtained when glucose react with hydrogen cyanide ?

Ans

✗ 1. n – Hexane

✓ 2. Glucose cyanohydrin

✗ 3. Gluconic acid

✗ 4. Saccharic acid

Question Type : **MCQ**
Question ID : **37135116926**
Option 1 ID : **37135167703**
Option 2 ID : **37135167704**
Option 3 ID : **37135167701**
Option 4 ID : **37135167702**
Status : **Answered**
Chosen Option : **2**

Section : **Mathematics**

Q.1 For any non - zero vectors $\bar{a}$ and $\bar{b}$, $[\ \bar{b}\quad \bar{a}\times\bar{b}\quad \bar{a}\ ] =$

Ans

✗ 1. $|\bar{a}\times\bar{b}|$

✓ 2. $|\bar{a}\times\bar{b}|^2$

✗ 3. 0

✗ 4. $\bar{a}\times\bar{b}$

Question Type : **MCQ**
Question ID : **37135116995**
Option 1 ID : **37135167978**
Option 2 ID : **37135167979**
Option 3 ID : **37135167980**
Option 4 ID : **37135167977**
Status : **Answered**
Chosen Option : **3**

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Q.2

The integrating factor of the differential equation $\text{siny}\left(\frac{dy}{dx}\right) = \text{cosy}\,(1 - x\,\text{cosy})$ is

Ans

✔ 1. e^{-x}

✘ 2. $e^{-\text{cosy}}$

✘ 3. e^{-y}

✘ 4. e^{siny}

Question Type : **MCQ**
Question ID : **37135116964**
Option 1 ID : **37135167853**
Option 2 ID : **37135167856**
Option 3 ID : **37135167854**
Option 4 ID : **37135167855**
Status : **Answered**
Chosen Option : **2**

Q.3

$$\int \frac{1 + 2e^{-x}}{1 - 2e^{-x}}\,dx =$$

Ans

✘ 1. $x - \log(1 - 2e^{-x}) + c$

✘ 2. $\log(1 - 2e^{-x}) + c$

✘ 3. $x + \log(1 - 2e^{-x}) + c$

✔ 4. $x + 2\log(1 - 2e^{-x}) + c$

Question Type : **MCQ**
Question ID : **37135116987**
Option 1 ID : **37135167947**
Option 2 ID : **37135167945**
Option 3 ID : **37135167946**
Option 4 ID : **37135167948**
Status : **Answered**
Chosen Option : **3**

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Q.4

If $\sin(x+y) + \cos(x+y) = \sin\left[\cos^{-1}\left(\frac{1}{3}\right)\right]$, then $\frac{dy}{dx} =$

Ans

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

2. -1

3. 1

4. 0

Question Type : **MCQ**
Question ID : **37135116974**
Option 1 ID : **37135167896**
Option 2 ID : **37135167895**
Option 3 ID : **37135167893**
Option 4 ID : **37135167894**
Status : **Answered**
Chosen Option : **2**

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Q.5 The area included between the parabolas $y^2 = 5x$ and $x^2 = 5y$ is

Ans

1. $\frac{25}{7}$ sq. units
2. $\frac{25}{3}$ sq. units
3. $\frac{25}{4}$ sq. units
4. 25 sq. units

Question Type : **MCQ**
Question ID : **37135116998**
Option 1 ID : **37135167989**
Option 2 ID : **37135167990**
Option 3 ID : **37135167991**
Option 4 ID : **37135167992**
Status : **Answered**
Chosen Option : **2**

Q.6 The micro-organisms double themselves in 3 hours. Assuming that the quantity increases at a rate proportional to it self, then the number of times it multiplies themselves in 18 years is

Ans

1. 32
2. 64
3. 128
4. 40

Question Type : **MCQ**
Question ID : **37135116999**
Option 1 ID : **37135167993**
Option 2 ID : **37135167995**
Option 3 ID : **37135167996**
Option 4 ID : **37135167994**
Status : **Answered**
Chosen Option : **3**

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Q.7

The points A $(-a, -b)$, B (0,0), C (a,b) and D(a^2, ab) are

Ans

1. collinear
2. vertices of a parallelogram
3. vertices of a square
4. vertices of a rectangle

Question Type : **MCQ**
Question ID : **37135116976**
Option 1 ID : **37135167902**
Option 2 ID : **37135167904**
Option 3 ID : **37135167901**
Option 4 ID : **37135167903**
Status : **Answered**
Chosen Option : **1**

Q.8

The domain of the function $f(x) = \sqrt{x}$ is

Ans

1. $R - \{0\}$
2. R^+
3. $R^+ \cup \{0\}$
4. R

Question Type : **MCQ**
Question ID : **37135116986**
Option 1 ID : **37135167942**
Option 2 ID : **37135167943**
Option 3 ID : **37135167944**
Option 4 ID : **37135167941**
Status : **Answered**
Chosen Option : **4**

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Q.9 The cosine of the angle included between the lines
$\bar{r} = (2\hat{i} + \hat{j} - 2\hat{k}) + \lambda(\hat{i} - 2\hat{j} - 2\hat{k})$ and $\bar{r} = (\hat{i} + \hat{j} + 3\hat{k}) + \mu(3\hat{i} + 2\hat{j} - 6\hat{k})$,
where $\lambda, \mu \in R$ is

Ans

1. $\frac{13}{21}$

2. $\frac{11}{21}$

3. $\frac{3}{21}$

4. $\frac{17}{21}$

Question Type : **MCQ**
Question ID : **37135116952**
Option 1 ID : **37135167805**
Option 2 ID : **37135167806**
Option 3 ID : **37135167807**
Option 4 ID : **37135167808**
Status : **Answered**
Chosen Option : **2**

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Q.10 The value of $\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{5}\right) + \tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{8}\right)$ is

Ans

✗ 1. $\frac{\pi}{3}$

✗ 2. $\frac{\pi}{12}$

✓ 3. $\frac{\pi}{4}$

✗ 4. $\frac{\pi}{6}$

Question Type : **MCQ**
Question ID : **37135116961**
Option 1 ID : **37135167841**
Option 2 ID : **37135167844**
Option 3 ID : **37135167842**
Option 4 ID : **37135167843**
Status : **Answered**
Chosen Option : **3**

Q.11 The maximum value of $Z = 3x + 5y$, subject to $3x + 2y \leq 18$, $x \leq 4$, $y \leq 6$, $x, y \geq 0$ is

Ans

✗ 1. 30

✗ 2. 27

✓ 3. 36

✗ 4. 32

Question Type : **MCQ**
Question ID : **37135116958**
Option 1 ID : **37135167829**
Option 2 ID : **37135167831**
Option 3 ID : **37135167830**
Option 4 ID : **37135167832**
Status : **Answered**
Chosen Option : **3**

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Q.12

$\text{Cos}\,(36° - \text{A})\,cos(36° + \text{A}) + \cos(54° + \text{A})\cos\,(54° - \text{A}) =$

Ans

1. ✔ Cos 2A
2. ✘ Cos A
3. ✘ Sin 2A
4. ✘ SinA

Question Type : **MCQ**
Question ID : **37135116956**
Option 1 ID : **37135167823**
Option 2 ID : **37135167822**
Option 3 ID : **37135167821**
Option 4 ID : **37135167824**
Status : **Answered**
Chosen Option : **1**

Q.13

The equation of normal to the curve $y = \sin\left(\frac{\pi x}{4}\right)$ at the point $(2, 5)$ is

Ans

1. ✘ $x + y = 5$
2. ✘ $y = 5$
3. ✔ $x = 2$
4. ✘ $x + y = 2$

Question Type : **MCQ**
Question ID : **37135116959**
Option 1 ID : **37135167836**
Option 2 ID : **37135167835**
Option 3 ID : **37135167833**
Option 4 ID : **37135167834**
Status : **Answered**
Chosen Option : **3**

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Q.14 For $f(x) = [x]$, wher $[x]$ is the greatest integer function, which of the following is true, for every $x \in R$.

Ans

1. $[x] + 1 = x$
2. $[x] + 1 \leq x$
3. $[x] + 1 > x$
4. $[x] + 1 < x$

Question Type : **MCQ**
Question ID : **37135116960**
Option 1 ID : **37135167838**
Option 2 ID : **37135167839**
Option 3 ID : **37135167840**
Option 4 ID : **37135167837**
Status : **Answered**
Chosen Option : **1**

Q.15 For every value of x, the function $f(x) = \frac{1}{a^x}$, $a > 0$ is

Ans

1. decreasing
2. increasing
3. Constant
4. Neither increasing nor decreasing

Question Type : **MCQ**
Question ID : **37135116962**
Option 1 ID : **37135167845**
Option 2 ID : **37135167846**
Option 3 ID : **37135167847**
Option 4 ID : **37135167848**
Status : **Answered**
Chosen Option : **1**

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Q.16 Let G be the centroid of a triangle ABC and O be any other point in that plane, then $\overline{OA} + \overline{OB} + \overline{OC} + \overline{OG} =$

Ans

✔ 1. $4\,\overline{OG}$

✘ 2. $\overline{O}$

✘ 3. $3\,\overline{OG}$

✘ 4. $2\,\overline{OG}$

Question Type : **MCQ**
Question ID : **37135117000**
Option 1 ID : **37135168000**
Option 2 ID : **37135167997**
Option 3 ID : **37135167999**
Option 4 ID : **37135167998**
Status : **Answered**
Chosen Option : **1**

Q.17 The rate at which the metal cools in moving air is proportional to the difference of tempratures between the metal and air. If the air temperature is 290K and the metal temperature drops from 370 K to 330 K in 10 minutes, then the time required to drop the temperature upto 295 K is

Ans

✔ 1. 40 min

✘ 2. 20 min

✘ 3. 35 min

✘ 4. 30 min

Question Type : **MCQ**
Question ID : **37135116969**
Option 1 ID : **37135167873**
Option 2 ID : **37135167876**
Option 3 ID : **37135167875**
Option 4 ID : **37135167874**
Status : **Answered**
Chosen Option : **2**

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Q.18

$$\int_{\frac{\pi}{5}}^{\frac{3\pi}{10}} \left[\frac{tanx}{tanx + cotx}\right] dx =$$

Ans

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

2. $\frac{3\pi}{10}$

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

4. $\frac{\pi}{20}$

Question Type : **MCQ**
Question ID : **37135116957**
Option 1 ID : **37135167827**
Option 2 ID : **37135167826**
Option 3 ID : **37135167825**
Option 4 ID : **37135167828**
Status : **Answered**
Chosen Option : **4**

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Q.19 If p, q are true statement and r is false statement, then which of the following statements is a true statement.

Ans

✗ 1. $(p \wedge q) \rightarrow r$ is true.

✗ 2. $(p \rightarrow r) \rightarrow q$ is false.

✗ 3. $(p \vee q) \vee r$ is false.

✓ 4. $(p \leftrightarrow q) \leftrightarrow r$ is false.

Question Type : **MCQ**
Question ID : **37135116971**
Option 1 ID : **37135167881**
Option 2 ID : **37135167884**
Option 3 ID : **37135167882**
Option 4 ID : **37135167883**
Status : **Answered**
Chosen Option : **4**

Q.20 $$\int_{-5}^{5} log\left(\frac{7-x}{7+x}\right) dx =$$

Ans

✗ 1. 5

✓ 2. 0

✗ 3. -5

✗ 4. 10

Question Type : **MCQ**
Question ID : **37135116996**
Option 1 ID : **37135167981**
Option 2 ID : **37135167984**
Option 3 ID : **37135167983**
Option 4 ID : **37135167982**
Status : **Answered**
Chosen Option : **2**

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Q.21 The direction co-sines of the line which bisects the angle between positive direction of Y and Z axes are

Ans

1. $\frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}}$

2. $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0$

3. $0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

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

Question Type : **MCQ**
Question ID : **37135116968**
Option 1 ID : **37135167871**
Option 2 ID : **37135167869**
Option 3 ID : **37135167870**
Option 4 ID : **37135167872**
Status : **Answered**
Chosen Option : **3**

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Q.22

If $f(x) = \frac{|x|}{x}$, for $x \neq 0$

$= 1$, for $x = 0$, then the function is

Ans

1. continuous but not differentiable at $x = 0$

2. differentiable but not continuous at $x = 0$

3. neither continuous nor differentiable at $x = 0$

4. continuous and differentiable at $x = 0$

Question Type : **MCQ**
Question ID : **37135116984**
Option 1 ID : **37135167933**
Option 2 ID : **37135167934**
Option 3 ID : **37135167936**
Option 4 ID : **37135167935**
Status : **Answered**
Chosen Option : **3**

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Q.23 Out of 100 people selected at random, 10 have common cold. If five persons selected at random from the group, then the probability that at most one person will have common cold is

Ans

1. 0·9254
2. 0·9185
3. 0·9851
4. 0·9245

Question Type : **MCQ**
Question ID : **37135116955**
Option 1 ID : **37135167817**
Option 2 ID : **37135167819**
Option 3 ID : **37135167818**
Option 4 ID : **37135167820**
Status : **Answered**
Chosen Option : **4**

Q.24

The matrix $A = \begin{bmatrix} a & -1 & 4 \\ -3 & 0 & 1 \\ -1 & 1 & 2 \end{bmatrix}$ is not invertible only if a =

Ans

1. -17
2. -16
3. 16
4. 17

Question Type : **MCQ**
Question ID : **37135116973**
Option 1 ID : **37135167890**
Option 2 ID : **37135167892**
Option 3 ID : **37135167891**
Option 4 ID : **37135167889**
Status : **Answered**
Chosen Option : **1**

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Q.25

$$\int \frac{dx}{cos2x - cos^2x} =$$

Ans

1. $-cot\ x + c$
2. $\tan x + c$
3. $-\tan x + c$
4. $\cot x + c$

Question Type : **MCQ**
Question ID : **37135116993**
Option 1 ID : **37135167970**
Option 2 ID : **37135167971**
Option 3 ID : **37135167972**
Option 4 ID : **37135167969**
Status : **Answered**
Chosen Option : **4**

Q.26 The straight lines represented by the equation $9x^2 - 12xy + 4y^2 = 0$ are

Ans

1. coincident
2. perpendicular
3. intersect at 60°
4. parallel

Question Type : **MCQ**
Question ID : **37135116963**
Option 1 ID : **37135167852**
Option 2 ID : **37135167850**
Option 3 ID : **37135167851**
Option 4 ID : **37135167849**
Status : **Answered**
Chosen Option : **1**

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Q.27 The length of latus -rectum of the parabola $x^2 + 2y = 8x - 7$ is

Ans

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

Question Type : **MCQ**
Question ID : **37135116951**
Option 1 ID : **37135167804**
Option 2 ID : **37135167801**
Option 3 ID : **37135167803**
Option 4 ID : **37135167802**
Status : **Answered**
Chosen Option : **1**

Q.28 In a ΔABC if $2\cos C = \sin B.\operatorname{Cosec} A$, then

Ans

1. $a = b$
2. $b = c$
3. $a = c$
4. $a = b = c$

Question Type : **MCQ**
Question ID : **37135116991**
Option 1 ID : **37135167963**
Option 2 ID : **37135167961**
Option 3 ID : **37135167962**
Option 4 ID : **37135167964**
Status : **Answered**
Chosen Option : **3**

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Q.29

If $f(x) = \sin^{-1}\left(\sqrt{\frac{1-x}{2}}\right)$, then $f'(x) =$

Ans

1. $\frac{-1}{2\sqrt{1-x^2}}$

2. $\frac{1}{\sqrt{1-x^2}}$

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

4. $\frac{1}{2\sqrt{1+x^2}}$

Question Type : **MCQ**
Question ID : **37135116975**
Option 1 ID : **37135167897**
Option 2 ID : **37135167898**
Option 3 ID : **37135167900**
Option 4 ID : **37135167899**
Status : **Answered**
Chosen Option : **1**

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Q.30

$$\left[\sin\left(\tan^{-1}\frac{3}{4}\right)\right]^2+\left[\sin\left(\tan^{-1}\frac{4}{3}\right)\right]^2=$$

Ans

1. 5
2. 1
3. -1
4. 0

Question Type : **MCQ**
Question ID : **37135116988**
Option 1 ID : **37135167952**
Option 2 ID : **37135167949**
Option 3 ID : **37135167951**
Option 4 ID : **37135167950**
Status : **Answered**
Chosen Option : **2**

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Q.31

The function $f(x) = \frac{x+1}{9x+x^3}$ is

Ans

1. discontinuous at exactly two points.

2. continuous for all real values of x.

3. discontinuous at exactly three points.

4. discontinuous at exactly one point.

Question Type : **MCQ**
Question ID : **37135116967**
Option 1 ID : **37135167866**
Option 2 ID : **37135167868**
Option 3 ID : **37135167867**
Option 4 ID : **37135167865**
Status : **Answered**
Chosen Option : **1**

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Q.32

$\tan A + 2\tan 2A + 4\tan 4A + 8\,\text{Cot}\,8A =$

Ans

1. $\tan A$
2. $\text{Cot}\,A$
3. $\tan 2A$
4. $\text{Cot}\,2A$

Question Type : **MCQ**
Question ID : **37135116965**
Option 1 ID : **37135167857**
Option 2 ID : **37135167860**
Option 3 ID : **37135167858**
Option 4 ID : **37135167859**
Status : **Answered**
Chosen Option : **1**

Q.33

The particular solution of the differential equation $y\left(\frac{dx}{dy}\right) = x\log x$ at $x = e$ and $y = 1$ is

Ans

1. $e^{xy} = 2$
2. $x = e^{y}$
3. $xy = 2$
4. $\log x = 2y$

Question Type : **MCQ**
Question ID : **37135116953**
Option 1 ID : **37135167812**
Option 2 ID : **37135167810**
Option 3 ID : **37135167811**
Option 4 ID : **37135167809**
Status : **Answered**
Chosen Option : **2**

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Q.34

If $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 0 \\ 3 & 1 \end{bmatrix}$, then $B^{-1}A^{-1} =$

Ans

✔ 1. $\begin{bmatrix} 2 & -3 \\ -7 & 11 \end{bmatrix}$

✘ 2. $\begin{bmatrix} 2 & 3 \\ 7 & 11 \end{bmatrix}$

✘ 3. $\begin{bmatrix} -2 & -3 \\ -7 & 11 \end{bmatrix}$

✘ 4. $\begin{bmatrix} -2 & -3 \\ -7 & -11 \end{bmatrix}$

Question Type : **MCQ**
Question ID : **37135116985**
Option 1 ID : **37135167939**
Option 2 ID : **37135167940**
Option 3 ID : **37135167937**
Option 4 ID : **37135167938**
Status : **Answered**
Chosen Option : **1**

Q.35

The odds in favour of drawing a king from a pack of 52 playing cards is

Ans

✔ 1. 1 : 12

✘ 2. 4 : 1

✘ 3. 12 : 1

✘ 4. 1 : 4

Question Type : **MCQ**
Question ID : **37135116989**
Option 1 ID : **37135167955**
Option 2 ID : **37135167954**
Option 3 ID : **37135167956**
Option 4 ID : **37135167953**
Status : **Answered**
Chosen Option : **1**

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Q.36

The eccentricity of the ellipse $y^2 + 4x^2 - 12x + 6y + 14 = 0$ is

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116979**
Option 1 ID : **37135167915**
Option 2 ID : **37135167916**
Option 3 ID : **37135167913**
Option 4 ID : **37135167914**
Status : **Answered**
Chosen Option : **1**

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Q.37 If the equation $ax^2 + 2hxy + by^2 + 2gx + 2fy = 0$ has one line as the bisector of the angle between co-ordinate axes, then

Ans

1. $(a+b)^2 = 4(h^2+g^2)$

2. $(a+b)^2 = 4h^2$

3. $(a+b)^2 = 4(h^2+f^2)$

4. $(a+b)^2 = 4(h^2+g^2+f^2)$

Question Type : **MCQ**
Question ID : **37135116992**
Option 1 ID : **37135167965**
Option 2 ID : **37135167966**
Option 3 ID : **37135167967**
Option 4 ID : **37135167968**
Status : **Answered**
Chosen Option : **2**

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Q.38 If the volume of the parallelopiped whose conterminus edges are along the vectors $\bar{a}, \bar{b}, \bar{c}$ is 12, then the volume of the tetrahedron whose conterminus edges are $\bar{a} + \bar{b}$, $\bar{b} + \bar{c}$ and $\bar{c} + \bar{a}$ is

Ans

✔ 1. $4\ (\text{units})^3$

✘ 2. $24\ (\text{units})^3$

✘ 3. $6\ (\text{units})^3$

✘ 4. $12\ (\text{units})^3$

Question Type : **MCQ**
Question ID : **37135116966**
Option 1 ID : **37135167861**
Option 2 ID : **37135167863**
Option 3 ID : **37135167864**
Option 4 ID : **37135167862**
Status : **Answered**
Chosen Option : **1**

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Q.39

If the plane $2x + 3y+5z = 1$ intersects the co-ordinate axes at the points A,B,C, then the centroid of ΔABC is

Ans

1. $\left(\frac{3}{2}, 1, \frac{3}{5}\right)$

2. $\left(\frac{1}{2}, \frac{1}{3}, \frac{1}{5}\right)$

3. $\left(\frac{1}{6}, \frac{1}{9}, \frac{1}{15}\right)$

4. $(2, 3, 5)$

Question Type : **MCQ**
Question ID : **37135116978**
Option 1 ID : **37135167911**
Option 2 ID : **37135167909**
Option 3 ID : **37135167912**
Option 4 ID : **37135167910**
Status : **Answered**
Chosen Option : **3**

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Q.40

The angle between the lines $\frac{x-1}{4}=\frac{y-3}{1}=\frac{z}{8}$ and $\frac{x-2}{2}=\frac{y+1}{2}=\frac{z-4}{1}$ is

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116983**
Option 1 ID : **37135167932**
Option 2 ID : **37135167930**
Option 3 ID : **37135167929**
Option 4 ID : **37135167931**
Status : **Answered**
Chosen Option : **4**

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Q.41 The p.d.f. of a continuous r.v. X is given by $f(x) = \frac{x}{8}, 0 < x < 4$
$= 0$, otherwise, then P $(X \leq 2)$ is

Ans

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

2. $\frac{9}{16}$

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

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

Question Type : **MCQ**
Question ID : **37135116977**
Option 1 ID : **37135167906**
Option 2 ID : **37135167908**
Option 3 ID : **37135167907**
Option 4 ID : **37135167905**
Status : **Answered**
Chosen Option : **3**

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Q.42

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

Ans

1. $\frac{x}{(1+\log x)} + c$

2. $\frac{x}{1+(\log x)^2} + c$

3. $\frac{x^2}{1+(\log x)^2} + c$

4. $\frac{1}{1+(\log x)^2} + c$

Question Type : **MCQ**
Question ID : **37135116980**
Option 1 ID : **37135167919**
Option 2 ID : **37135167920**
Option 3 ID : **37135167918**
Option 4 ID : **37135167917**
Status : **Answered**
Chosen Option : **2**

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Q.43

If a die is thrown at random, then the expectation of the number on it is

Ans

1. $2 \cdot 4$

2. $3 \cdot 5$

3. $2 \cdot 1$

4. $3 \cdot 3$

Question Type : **MCQ**
Question ID : **37135116997**
Option 1 ID : **37135167986**
Option 2 ID : **37135167988**
Option 3 ID : **37135167985**
Option 4 ID : **37135167987**
Status : **Answered**
Chosen Option : **4**

Q.44

If $x + y = \frac{\pi}{2}$, then the maximum value of $\sin x . \sin y$ is

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116990**
Option 1 ID : **37135167959**
Option 2 ID : **37135167960**
Option 3 ID : **37135167958**
Option 4 ID : **37135167957**
Status : **Answered**
Chosen Option : **1**

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Q.45

If $a = \sin 175° + \cos 175°$, then

Ans

1. $a > 0$ ✗
2. $a = 0$ ✗
3. $a < 0$ ✓
4. $a = 1$ ✗

Question Type : **MCQ**
Question ID : **37135116970**
Option 1 ID : **37135167877**
Option 2 ID : **37135167879**
Option 3 ID : **37135167878**
Option 4 ID : **37135167880**
Status : **Answered**
Chosen Option : **2**

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Q.46

The rational form of a number $1\cdot\overline{41}$ is

Ans

1. $\frac{154}{99}$

2. $\frac{55}{99}$

3. $\frac{140}{99}$

4. $\frac{41}{99}$

Question Type : **MCQ**
Question ID : **37135116994**
Option 1 ID : **37135167974**
Option 2 ID : **37135167975**
Option 3 ID : **37135167976**
Option 4 ID : **37135167973**
Status : **Answered**
Chosen Option : **1**

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Q.47

The order and degree of the differential equation $\left[1+\left[\frac{dy}{dx}\right]^3\right]^{\frac{7}{3}} = 7\frac{d^2y}{dx^2}$ are respectively.

Ans

1. 2 , 1
2. 2 , 3
3. 1 , 2
4. 3 , 2

Question Type : **MCQ**
Question ID : **37135116972**
Option 1 ID : **37135167888**
Option 2 ID : **37135167886**
Option 3 ID : **37135167887**
Option 4 ID : **37135167885**
Status : **Answered**
Chosen Option : **2**

Q.48

The negation of the statement 'He is poor but happy' is

Ans

1. He is poor but not happy.
2. He is not poor or not happy.
3. He is not poor and not happy.
4. He is neither poor nor happy.

Question Type : **MCQ**
Question ID : **37135116954**
Option 1 ID : **37135167816**
Option 2 ID : **37135167815**
Option 3 ID : **37135167814**
Option 4 ID : **37135167813**
Status : **Answered**
Chosen Option : **2**

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Q.49 If the line $\bar{r} = (\hat{i} - 2\hat{j} + 3\hat{k}) + \lambda (2\hat{i} + \hat{j} + 2\hat{k})$ is parallel to the plane $\bar{r} \cdot (3\hat{i} - 2\hat{j} + m\hat{k}) = 10$, then the value of m is

Ans

1. ✗ 2
2. ✗ -3
3. ✓ -2
4. ✗ 3

Question Type : **MCQ**
Question ID : **37135116981**
Option 1 ID : **37135167921**
Option 2 ID : **37135167924**
Option 3 ID : **37135167922**
Option 4 ID : **37135167923**
Status : **Answered**
Chosen Option : **3**

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Q.50

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

Ans

1. $1+\frac{3\pi}{4}$

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

3. $1-\frac{\pi}{4}$

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

Question Type : **MCQ**
Question ID : **37135116982**
Option 1 ID : **37135167928**
Option 2 ID : **37135167927**
Option 3 ID : **37135167926**
Option 4 ID : **37135167925**
Status : **Answered**
Chosen Option : **2**

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