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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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Participant ID:	[redacted]
Participant Name:	
Test Center Name:	
Test Date:	14/10/2020
Test Time:	9:00 AM - 12:00 PM
Subject:	PCM

Section : **Physics**

Q.1 Two rings of radius 'R' and 'nR' made of same material have the ratio of moment of inertia about an axis passing through its centre and perpendicular to the plane as 1:8. The value of 'n' is (mass per unit length is constant)

Ans

✗ 1. 1

✗ 2. 3

✗ 3. 4

✓ 4. 2

3

Question Type : **MCQ**
Question ID : **37135116136**
Option 1 ID : **37135164544**
Option 2 ID : **37135164542**
Option 3 ID : **37135164541**
Option 4 ID : **37135164543**
Status : **Answered**
Chosen Option : **4**

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Q.2 Two wires of same length and material are stretched by same force. If their masses are in the ratio 3:4, then the ratio of their elongations is

Ans

✔ 1. $\frac{4}{3}$

✘ 2. $\frac{5}{3}$

✘ 3. $\frac{1}{3}$

✘ 4. $\frac{2}{3}$

5

Question Type : **MCQ**
Question ID : **37135116109**
Option 1 ID : **37135164433**
Option 2 ID : **37135164436**
Option 3 ID : **37135164435**
Option 4 ID : **37135164434**
Status : **Answered**
Chosen Option : **1**

Q.3 Two open organ pipes of fundamental frequencies n_1 and n_2 are joined in series. The fundamental frequency of the new pipe is

Ans

✘ 1. $n_1 - n_2$

✔ 2. $\frac{n_1 n_2}{(n_1+n_2)}$

✘ 3. $\frac{1}{n_1 n_2}$

✘ 4. $\frac{n_1+n_2}{n_1 n_2}$

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Question Type : **MCQ**
Question ID : **37135116112**
Option 1 ID : **37135164446**
Option 2 ID : **37135164445**
Option 3 ID : **37135164448**
Option 4 ID : **37135164447**
Status : **Answered**
Chosen Option : **2**

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Q.4 An electron is projected along the axis of circular conductor carrying current I. Electron will experience

Ans

✗ 1. a force at an angle of 30° with the axis .

✓ 2. no force.

✗ 3. a force along the axis.

✗ 4. a force perpendicular to the axis.

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Question Type : **MCQ**
Question ID : **37135116148**
Option 1 ID : **37135164590**
Option 2 ID : **37135164591**
Option 3 ID : **37135164589**
Option 4 ID : **37135164592**
Status : **Answered**
Chosen Option : **2**

Q.5 For which logic gate the following statement is true? The output is high if and only if all inputs are high.

Ans

✓ 1. AND

✗ 2. OR

✗ 3. NOR

✗ 4. NAND

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Question Type : **MCQ**
Question ID : **37135116146**
Option 1 ID : **37135164583**
Option 2 ID : **37135164581**
Option 3 ID : **37135164584**
Option 4 ID : **37135164582**
Status : **Answered**
Chosen Option : **2**

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Q.6 A coil of radius 'r' is placed on another coil (whose radius is 'R' and current flowing through it is changing) so that their centres coincide. (R≫r)If both the coils are coplanar then the mutual inductance between them is proportional to

Ans

✗ 1. $\frac{r}{R}$

✗ 2. $\frac{R}{r}$

✗ 3. $\frac{R}{r^2}$

✓ 4. $\frac{r^2}{R}$

96

Question Type : **MCQ**
Question ID : **37135116133**
Option 1 ID : **37135164532**
Option 2 ID : **37135164531**
Option 3 ID : **37135164530**
Option 4 ID : **37135164529**
Status : **Answered**
Chosen Option : **2**

Q.7 A ray of light travels from air to water to glass and again from glass to air. Refractive index of water with respect to air is 'x', glass with respect to water is 'y' and air with respect to glass is 'z'. Which one of the following is correct?

Ans

✗ 1. $xz = y$

✗ 2. $yz = x$

✓ 3. $xyz = 1$

✗ 4. $xy = z$

25

Question Type : **MCQ**
Question ID : **37135116103**
Option 1 ID : **37135164411**
Option 2 ID : **37135164412**
Option 3 ID : **37135164409**
Option 4 ID : **37135164410**
Status : **Answered**
Chosen Option : **2**

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Q.8 The magnetic field due to a short bar magnet at an axial point at a distance 'r' from its centre is 'B'. If this axis is moved towards the equator of the magnet along a circular path of radius 'r' then the magnetic field 'B' will

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Ans

✗ 1. not change.

✗ 2. go on increasing.

✗ 3. increase from zero to infinity.

✓ 4. go on decreasing.

Question Type : **MCQ**
Question ID : **37135116118**
Option 1 ID : **37135164469**
Option 2 ID : **37135164470**
Option 3 ID : **37135164472**
Option 4 ID : **37135164471**
Status : **Answered**
Chosen Option : **4**

Q.9 Two stones of masses m and 3m are whirled in horizontal circles, the heavier one in radius $\left(\frac{r}{3}\right)$ and lighter one in radius 'r'. The tangential speed of lighter stone is 'n' times that of the value of heavier stone, when they experience same centripetal force. The value of n is

1

Ans

✗ 1. 2

✓ 2. 3

✗ 3. 1

✗ 4. 4

Question Type : **MCQ**
Question ID : **37135116128**
Option 1 ID : **37135164510**
Option 2 ID : **37135164511**
Option 3 ID : **37135164509**
Option 4 ID : **37135164512**
Status : **Answered**
Chosen Option : **2**

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Q.10 When a resistance of 200Ω is connected in series with a galvanometer of resistance 'G', its range is 'V'. To triple its range, a resistance of 2000 Ω is connected in series. The value of G is

Ans

✔ 1. 700 Ω

✘ 2. 900 Ω

✘ 3. 400 Ω

✘ 4. 600 Ω

Question Type : **MCQ**
Question ID : **37135116123**
Option 1 ID : **37135164491**
Option 2 ID : **37135164492**
Option 3 ID : **37135164489**
Option 4 ID : **37135164490**
Status : **Answered**
Chosen Option : **1**

Q.11 The displacement of the particle executing linear S.H.M. is $x = 0{\cdot}25 \sin(11t + 0{\cdot}5)$m.
The period of S.H.M. is $\left(\pi = \frac{22}{7}\right)$

Ans

✘ 1. $\frac{2}{7}$ s

✔ 2. $\frac{4}{7}$ s

✘ 3. $\frac{3}{7}$ s

✘ 4. $\frac{1}{7}$ s

Question Type : **MCQ**
Question ID : **37135116113**
Option 1 ID : **37135164452**
Option 2 ID : **37135164450**
Option 3 ID : **37135164451**
Option 4 ID : **37135164449**
Status : **Answered**
Chosen Option : **2**

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Q.12 Let the inductance and resistance be denoted by 'L' and 'R' respectively. The dimensions of $\left(\frac{L}{R}\right)$ are

Ans

✗ 1. $[L^1M^0T^1]$

✗ 2. $[L^0M^0T^0]$

✗ 3. $[L^0M^1T^0]$

✓ 4. $[L^0M^0T^1]$

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Question Type : **MCQ**
Question ID : **37135116117**
Option 1 ID : **37135164468**
Option 2 ID : **37135164465**
Option 3 ID : **37135164467**
Option 4 ID : **37135164466**
Status : **Answered**
Chosen Option : **4**

Q.13 The moment of inertia of a thin uniform rod about a perpendicular axis passing through one of its ends is 'I'. Now, the rod is bent in a ring and its moment of inertia about diameter is 'I_1'. Then $\frac{I}{I_1}$ is

Ans

✓ 1. $\frac{8\pi^2}{3}$

✗ 2. $\frac{11\pi^2}{3}$

✗ 3. $\frac{4\pi^2}{3}$

✗ 4. $\frac{\pi^2}{3}$

3

Question Type : **MCQ**
Question ID : **37135116121**
Option 1 ID : **37135164483**
Option 2 ID : **37135164484**
Option 3 ID : **37135164482**
Option 4 ID : **37135164481**
Status : **Answered**
Chosen Option : **1**

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Q.14 Heat is applied to a rigid diatomic gas at constant pressure. The ratio $\Delta Q : \Delta U : \Delta W$ is

Ans

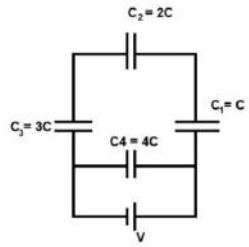
1. ✗ $5:7:2$
2. ✓ $7:5:2$
3. ✗ $2:5:7$
4. ✗ $5:2:7$



Question Type : **MCQ**
Question ID : **37135116143**
Option 1 ID : **37135164572**
Option 2 ID : **37135164571**
Option 3 ID : **37135164569**
Option 4 ID : **37135164570**
Status : **Answered**
Chosen Option : **2**

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Q.15 A network of 4 capacitors is connected to a battery as shown. The ratio of the charges on capacitors C_2 and C_4 is



12

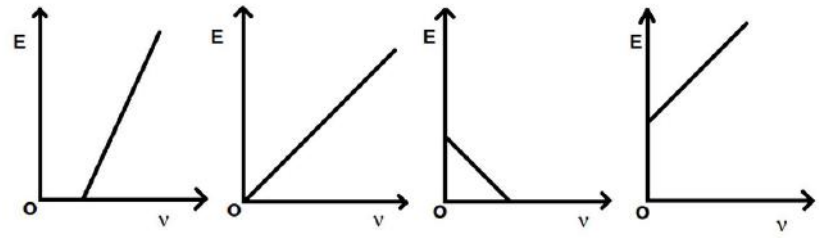
Ans

1. $\frac{3}{13}$
2. $\frac{3}{19}$
3. $\frac{3}{17}$
4. $\frac{3}{22}$

Question Type : **MCQ**
Question ID : **37135116110**
Option 1 ID : **37135164440**
Option 2 ID : **37135164438**
Option 3 ID : **37135164439**
Option 4 ID : **37135164437**
Status : **Answered**
Chosen Option : **1**

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Q.16 Using Einstein's photoelectric equation, the graph between the K-E.(E) of photoelectrons emitted and the frequency of incident radiation (ν) is shown correctly in figure



(A) (B) (C) (D)

17

Ans

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

Question Type : **MCQ**
Question ID : **37135116111**
Option 1 ID : **37135164443**
Option 2 ID : **37135164441**
Option 3 ID : **37135164444**
Option 4 ID : **37135164442**
Status : **Answered**
Chosen Option : **2**

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Q.17 A body initially at rest is acted upon by a constant force (F) for time (t). The kinetic energy at time t is

Ans

✗ 1. $\frac{F^2t^2}{m}$

✗ 2. $\left(\frac{Ft}{m}\right)^2$

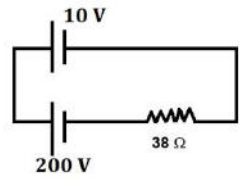
✗ 3. $\frac{Ft}{2m}$

✓ 4. $\frac{F^2t^2}{2m}$

Question Type :	**MCQ**
Question ID :	**37135116127**
Option 1 ID :	**37135164505**
Option 2 ID :	**37135164508**
Option 3 ID :	**37135164507**
Option 4 ID :	**37135164506**
Status :	**Answered**
Chosen Option :	**3**

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Q.18 Using Kirchhoff's law, find the current flowing through the given circuit.



Ans

1. 7·5 A
2. ✓ 5 A
3. 10 A
4. 3 A

Question Type : **MCQ**
Question ID : **37135116108**
Option 1 ID : **37135164430**
Option 2 ID : **37135164431**
Option 3 ID : **37135164429**
Option 4 ID : **37135164432**
Status : **Answered**
Chosen Option : **2**

Q.19 One thousand small water drops of equal radii combine to form a big drop. The ratio of final surface energy to the total initial surface energy is

Ans

1. 1 : 1000
2. 1 : 1
3. ✓ 1 : 10
4. 1 : 100

Question Type : **MCQ**
Question ID : **37135116132**
Option 1 ID : **37135164528**
Option 2 ID : **37135164526**
Option 3 ID : **37135164525**
Option 4 ID : **37135164527**
Status : **Answered**
Chosen Option : **4**

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Q.20 Let the r.m.s. velocity of molecule of a given mass of gas be C_1 at temperature 27°C. When the temperature is increased to 327°C, the r.m.s. velocity is C_2. Then the ratio $\frac{C_2}{C_1}$ is

Ans

✔ 1. $\sqrt{2}$

✘ 2. 2

✘ 3. 4

✘ 4. $2\sqrt{2}$

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Question Type : **MCQ**
Question ID : **37135116119**
Option 1 ID : **37135164473**
Option 2 ID : **37135164474**
Option 3 ID : **37135164476**
Option 4 ID : **37135164475**
Status : **Answered**
Chosen Option : **1**

Q.21 In the case of spherical mirrors, the images formed on the side of the object and images formed on the opposite side are respectively

Ans

✘ 1. virtual and real.

✘ 2. virtual and virtual.

✘ 3. real and real.

✔ 4. real and virtual.

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Question Type : **MCQ**
Question ID : **37135116135**
Option 1 ID : **37135164539**
Option 2 ID : **37135164540**
Option 3 ID : **37135164538**
Option 4 ID : **37135164537**
Status : **Answered**
Chosen Option : **4**

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Q.22 The refractive index of the medium is $\mu = A + \frac{B}{\lambda^2}$, where A and B are constants and λ is the wavelength of light. The dimensions of B are same as that of

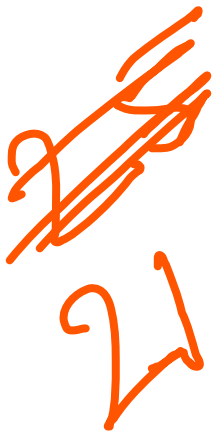
Ans

✗ 1. velocity.

✓ 2. area.

✗ 3. wavelength.

✗ 4. volume.



Question Type : **MCQ**
Question ID : **37135116138**
Option 1 ID : **37135164552**
Option 2 ID : **37135164550**
Option 3 ID : **37135164549**
Option 4 ID : **37135164551**
Status : **Answered**
Chosen Option : **2**

Q.23 In potentiometer experiment, cells of e.m.f. E_1 and E_2 are connected in series ($E_1 > E_2$), the balancing length is 64 cm of the wire. If the polarity of E_2 is reversed, the balancing length becomes 32 cm. The ratio $\frac{E_1}{E_2}$ is

Ans

✗ 1. 1 : 2

✗ 2. 2 : 1

✗ 3. 1 : 3

✓ 4. 3 : 1



Question Type : **MCQ**
Question ID : **37135116126**
Option 1 ID : **37135164501**
Option 2 ID : **37135164502**
Option 3 ID : **37135164504**
Option 4 ID : **37135164503**
Status : **Answered**
Chosen Option : **4**

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Q.24 According to theoretical study of radiation from a same linear antenna, the power radiated is proportional to [λ = wavelength]

Ans

✔ 1. λ^{-2}

✘ 2. λ^{-1}

✘ 3. λ^{2}

✘ 4. λ

Question Type : **MCQ**
Question ID : **37135116144**
Option 1 ID : **37135164573**
Option 2 ID : **37135164576**
Option 3 ID : **37135164574**
Option 4 ID : **37135164575**
Status : **Answered**
Chosen Option : **2**

Q.25 The excess pressure inside the first soap bubble of radius 'R_1' is two times, that inside the second soap bubble of radius 'R_2'. The ratio of volumes of the first bubble to that of second bubble is

Ans

✘ 1. 1 : 4

✘ 2. 1 : 1

✘ 3. 1 : 2

✔ 4. 1 : 8

Question Type : **MCQ**
Question ID : **37135116147**
Option 1 ID : **37135164586**
Option 2 ID : **37135164588**
Option 3 ID : **37135164587**
Option 4 ID : **37135164585**
Status : **Answered**
Chosen Option : **4**

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Q.26 A double slit experiment is immersed in water of refractive index 1·33. The slit separation is 1 mm, distance between slit and screen is 1·33 m. The slits are illuminated by a light of wavelength 6300 Å. The fringewidth is

Ans

1. $6{\cdot}9 \times 10^{-4}$ m
2. $6{\cdot}3 \times 10^{-4}$ m
3. $5{\cdot}8 \times 10^{-4}$ m
4. $8{\cdot}6 \times 10^{-4}$ m

Question Type : **MCQ**
Question ID : **37135116145**
Option 1 ID : **37135164580**
Option 2 ID : **37135164577**
Option 3 ID : **37135164578**
Option 4 ID : **37135164579**
Status : **Answered**
Chosen Option : **2**

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Q.27 The angle between two forces of equal magnitude R, if the magnitude of their resultant is $\frac{R}{2}$, is

Ans

✔ 1. $\cos^{-1}\left(-\frac{7}{8}\right)$

✘ 2. $\cos^{-1}\left(-\frac{5}{7}\right)$

✘ 3. $\cos^{-1}\left(-\frac{3}{7}\right)$

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

Question Type : **MCQ**
Question ID : **37135116140**
Option 1 ID : **37135164557**
Option 2 ID : **37135164558**
Option 3 ID : **37135164560**
Option 4 ID : **37135164559**
Status : **Answered**
Chosen Option : **1**

Q.28 Two wires of same material are vibrating under the same tension. If the first overtone of first wire is equal to the second overtone of second wire and radius of first wire is twice the radius of the second then the ratio of length of first wire to second wire is

Ans

✔ 1. 1 : 3

✘ 2. 1 : 2

✘ 3. 2 : 1

✘ 4. 3 : 1

Question Type : **MCQ**
Question ID : **37135116149**
Option 1 ID : **37135164593**
Option 2 ID : **37135164594**
Option 3 ID : **37135164596**
Option 4 ID : **37135164595**
Status : **Answered**
Chosen Option : **3**

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Q.29 If the number of turns in the coil of galvanometer are decreased then the resistance of galvanometer

Ans

✗ 1. may increase or decrease.

✗ 2. increases.

✗ 3. remains the same

✓ 4. decreases.

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Question Type : **MCQ**
Question ID : **37135116120**
Option 1 ID : **37135164480**
Option 2 ID : **37135164478**
Option 3 ID : **37135164479**
Option 4 ID : **37135164477**
Status : **Answered**
Chosen Option : **3**

Q.30 Let M and L be the mass and length of thin uniform rod respectively. In 1st case, axis of rotation is passing through centre and perpendicular to its length. In 2nd case, axis of rotation is passing through one end and perpendicular to its length. The ratio of radius of gyration in first case to second case is

Ans

✗ 1. 3:1

✓ 2. 1:2

✗ 3. 2:1

✗ 4. 1:3

3

Question Type : **MCQ**
Question ID : **37135116114**
Option 1 ID : **37135164456**
Option 2 ID : **37135164453**
Option 3 ID : **37135164455**
Option 4 ID : **37135164454**
Status : **Answered**
Chosen Option : **2**

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Q.31 The magnetic moment produced in a sample of 2 gram is $8 \times 10^{-7} A/m^2$. If its density is $4 g/cm^3$, then the magnetization of the sample is

Ans

✗ 1. 1·2

✗ 2. 1·8

✗ 3. 1·4

✓ 4. 1·6

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Question Type : **MCQ**
Question ID : **37135116131**
Option 1 ID : **37135164521**
Option 2 ID : **37135164524**
Option 3 ID : **37135164522**
Option 4 ID : **37135164523**
Status : **Answered**
Chosen Option : **4**

Q.32 A sonometer wire resonates with a given tuning fork forming standing wave with 5 antinodes between two bridges when mass of 9 kg is suspended from the wire. When mass 'm' is suspended from the wire, with same fork and same length between two bridges 3 antinodes are formed. Mass M is

Ans

✓ 1. 25 kg

✗ 2. 20 kg

✗ 3. 15 kg

✗ 4. 10 kg

8

Question Type : **MCQ**
Question ID : **37135116115**
Option 1 ID : **37135164457**
Option 2 ID : **37135164458**
Option 3 ID : **37135164459**
Option 4 ID : **37135164460**
Status : **Answered**
Chosen Option : **1**

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Q.33 In any Bohr orbit of hydrogen atom, the ratio of K.E to P.E of revolving electron at a distance 'r' from the nucleus is

Ans

✗ 1. -1

✗ 2. $+\frac{1}{2}$

✗ 3. 1

✓ 4. $-\frac{1}{2}$

Question Type : **MCQ**
Question ID : **37135116122**
Option 1 ID : **37135164487**
Option 2 ID : **37135164488**
Option 3 ID : **37135164486**
Option 4 ID : **37135164485**
Status : **Answered**
Chosen Option : **4**

Q.34 A vector $\vec{A}$ when added to the sum of the vectors $(\hat{i}-2\hat{j}+2\hat{k})$ and $(-2\hat{i}+\hat{j}-\hat{k})$ gives a unit vector along y-axis. The magnitude of the vector $\vec{A}$ is

Ans

✗ 1. $\sqrt{3}$

✓ 2. $\sqrt{6}$

✗ 3. $\sqrt{8}$

✗ 4. $\sqrt{10}$

Question Type : **MCQ**
Question ID : **37135116124**
Option 1 ID : **37135164493**
Option 2 ID : **37135164494**
Option 3 ID : **37135164495**
Option 4 ID : **37135164496**
Status : **Answered**
Chosen Option : **2**

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Q.35 The angular speed of the minute hand of a clock in degrees per second is

Ans

✗ 1. $0{\cdot}01$

✓ 2. $0{\cdot}1$

✗ 3. 1

✗ 4. 10

Question Type : **MCQ**
Question ID : **37135116107**
Option 1 ID : **37135164427**
Option 2 ID : **37135164426**
Option 3 ID : **37135164425**
Option 4 ID : **37135164428**
Status : **Answered**
Chosen Option : **3**

Q.36 An air filled parallel plate capacitor has a uniform electric field 'E' in the space between the plates. If the distance between the plates is 'd' and area of each plate is 'A', the energy stored in the capacitor is (ϵ_0 = permittivity of free space)

Ans

✓ 1. $\frac{1}{2}\epsilon_0 E^2 Ad$

✗ 2. $E^2 \frac{Ad}{\epsilon_0}$

✗ 3. $\frac{1}{2}\epsilon_0 E^2$

✗ 4. $\epsilon_0 E Ad$

Question Type : **MCQ**
Question ID : **37135116139**
Option 1 ID : **37135164555**
Option 2 ID : **37135164556**
Option 3 ID : **37135164553**
Option 4 ID : **37135164554**
Status : **Answered**
Chosen Option : **1**

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Q.37 The escape velocity from the surface of earth of mass 'M' and radius 'R' is 'V_e'. The escape velocity from the surface of a planet whose mass and radius are 3 times that of the earth, will be

Ans

✗ 1. $9\,V_e$

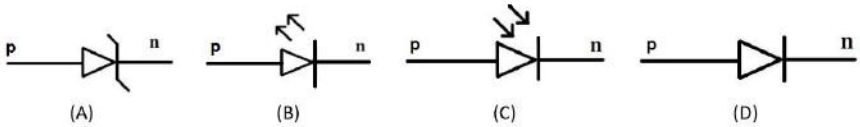
✗ 2. $3\,V_e$

✓ 3. V_e

✗ 4. $12\,V_e$

Question Type : **MCQ**
Question ID : **37135116130**
Option 1 ID : **37135164519**
Option 2 ID : **37135164518**
Option 3 ID : **37135164517**
Option 4 ID : **37135164520**
Status : **Answered**
Chosen Option : **3**

Q.38 Which one of the following symbols represents a photodiode ?



Ans

✗ 1. (B)

✗ 2. (A)

✓ 3. (C)

✗ 4. (D)

Question Type : **MCQ**
Question ID : **37135116105**
Option 1 ID : **37135164418**
Option 2 ID : **37135164417**
Option 3 ID : **37135164419**
Option 4 ID : **37135164420**
Status : **Answered**
Chosen Option : **2**

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Q.39

An electron and photon are accelerated through the same potential difference. The ratio of the de-Broglie wavelength λ_p to λ_e is [m_e = mass of electron, m_p = mass of proton]

Ans

✗ 1. $\left(\frac{m_p}{m_e}\right)^{\frac{1}{2}}$

✓ 2. $\left(\frac{m_e}{m_p}\right)^{\frac{1}{2}}$

✗ 3. $\left(\frac{m_e}{m_p}\right)$

✗ 4. $\left(\frac{m_p}{m_e}\right)$

18

Question Type : **MCQ**
Question ID : **37135116141**
Option 1 ID : **37135164564**
Option 2 ID : **37135164561**
Option 3 ID : **37135164563**
Option 4 ID : **37135164562**
Status : **Answered**
Chosen Option : **2**

Q.40

The ratio of frequencies of oscillations of two simple pendulums is 3 : 4, then their lengths are in the ratio

Ans

✓ 1. 16 : 9

✗ 2. 9 : 16

✗ 3. $\sqrt{3} : \sqrt{4}$

✗ 4. $\sqrt{4} : \sqrt{3}$

4

Question Type : **MCQ**
Question ID : **37135116142**
Option 1 ID : **37135164568**
Option 2 ID : **37135164567**
Option 3 ID : **37135164565**
Option 4 ID : **37135164566**
Status : **Answered**
Chosen Option : **2**

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Q.41 Two coherent sources of intensities I_1 and I_2 produce an interference pattern on screen. The maximum intensity in the interference pattern is

Ans

✔ 1. $\left[\sqrt{I_1}+\sqrt{I_2}\right]^2$

✘ 2. I_1+I_2

✘ 3. $(I_1+I_2)^2$

✘ 4. $I_1^2+I_2^2$

Question Type :	**MCQ**
Question ID :	**37135116104**
Option 1 ID :	**37135164413**
Option 2 ID :	**37135164414**
Option 3 ID :	**37135164416**
Option 4 ID :	**37135164415**
Status :	**Answered**
Chosen Option :	**1**

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Q.42 A metal surface having work function 'w_0' emits photoelectrons when photons of energy 'E' are incident on it. The electron enters the uniform magnetic field (B) in perpendicular direction and moves in circular path of radius 'r'. Then 'r' is equal to (m and e be the mass and charge of electron respectively).

Ans

✗ 1. $\frac{\sqrt{m(E-w_o)}}{eB}$

✗ 2. $\frac{m(E-w_o)}{eB}$

✓ 3. $\frac{\sqrt{2m(E-w_o)}}{eB}$

✗ 4. $\frac{2m(E-w_o)}{eB}$

17

Question Type : **MCQ**
Question ID : **37135116150**
Option 1 ID : **37135164598**
Option 2 ID : **37135164599**
Option 3 ID : **37135164600**
Option 4 ID : **37135164597**
Status : **Answered**
Chosen Option : **4**

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Q.43 A large vessel completely filled with water has two holes 'A' and 'B' at depths 'h' and '4h' from the top. Hole 'A' is a square of side 'L' and hole 'B' is circle of radius 'R'. If from both the holes same quanitity of water is flowing per second, then side of square hole is

Ans

1. ✗ $2\pi R$
2. ✗ $\sqrt{2\pi R}$
3. ✓ $\sqrt{2\pi} \cdot R$
4. ✗ $\frac{R}{2}$

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Question Type : **MCQ**
Question ID : **37135116106**
Option 1 ID : **37135164421**
Option 2 ID : **37135164422**
Option 3 ID : **37135164423**
Option 4 ID : **37135164424**
Status : **Answered**
Chosen Option : **3**

Q.44 A progressive wave of frequency 50 Hz is travelling with velocity 350 m/s through a medium. The change in phase at a given time interval of 0·01 s is

Ans

1. ✗ $\frac{\pi}{2}$ rad
2. ✓ π rad
3. ✗ $\frac{\pi}{4}$ rad
4. ✗ $\frac{3\pi}{2}$ rad

7

Question Type : **MCQ**
Question ID : **37135116102**
Option 1 ID : **37135164406**
Option 2 ID : **37135164407**
Option 3 ID : **37135164405**
Option 4 ID : **37135164408**
Status : **Answered**
Chosen Option : **2**

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Q.45 A small mass 'm' is suspended at the end of a wire having (negligible mass) length 'L' and cross-sectional area 'A'. The frequency of oscillation for the S.H.M. along the vertical line is (Y = Young's modulus of the wire)

Ans

✔ 1. $\frac{1}{2\pi}\left(\frac{YA}{mL}\right)^{\frac{1}{2}}$

✘ 2. $\frac{2\pi YA}{mL}$

✘ 3. $\frac{YA}{2\pi mL}$

✘ 4. $2\pi\left(\frac{YA}{mL}\right)^{\frac{1}{2}}$

Question Type : **MCQ**
Question ID : **37135116129**
Option 1 ID : **37135164513**
Option 2 ID : **37135164516**
Option 3 ID : **37135164515**
Option 4 ID : **37135164514**
Status : **Answered**
Chosen Option : **1**

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Q.46 A satellite of mass 'm', revolving round the earth of radius 'r' has kinetic energy (E). Its angular momentum is

Ans

✗ 1. $(mEr^2)^{\frac{1}{2}}$

✗ 2. (mEr^2)

✓ 3. $(2mEr^2)^{\frac{1}{2}}$

✗ 4. $(2mEr^2)$

2.

Question Type : **MCQ**
Question ID : **37135116116**
Option 1 ID : **37135164462**
Option 2 ID : **37135164464**
Option 3 ID : **37135164461**
Option 4 ID : **37135164463**
Status : **Answered**
Chosen Option : **4**

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Q.47 The density and bulk modulus of a metal bar is 'ϱ' and 'K' respectively. When pressure 'P' is applied from all sides to that metal bar, the increase in its density is

Ans

✗ 1. $\frac{\varrho P}{(K+P)}$

✓ 2. $\frac{\varrho P}{(K-P)}$

✗ 3. $\frac{K-P}{\varrho}$

✗ 4. $\frac{K+P}{\varrho}$

Question Type : **MCQ**
Question ID : **37135116125**
Option 1 ID : **37135164497**
Option 2 ID : **37135164498**
Option 3 ID : **37135164499**
Option 4 ID : **37135164500**
Status : **Answered**
Chosen Option : **1**

Q.48 When light enters glass from vacuum then the wavelength of light

Ans

✗ 1. remains constant.

✗ 2. becomes zero.

✓ 3. decreases.

✗ 4. increases.

Question Type : **MCQ**
Question ID : **37135116137**
Option 1 ID : **37135164546**
Option 2 ID : **37135164545**
Option 3 ID : **37135164548**
Option 4 ID : **37135164547**
Status : **Answered**
Chosen Option : **2**

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Q.49 An electron revolving in circular orbit of radius 'r' with velocity 'V' and frequency 'ν' has orbital magnetic moment 'M'. If the frequency of revolution is doubled then the new magnetic moment will be

Ans

✗ 1. $\frac{M}{4}$

✓ 2. $2M$

✗ 3. M

✗ 4. $\frac{M}{2}$

15

Question Type : **MCQ**
Question ID : **37135116101**
Option 1 ID : **37135164401**
Option 2 ID : **37135164404**
Option 3 ID : **37135164403**
Option 4 ID : **37135164402**
Status : **Answered**
Chosen Option : **3**

Q.50 The motion of a rocket in upward direction with high speed is based on the principle of conservation of

Ans

✗ 1. kinetic energy.

✗ 2. mass.

✗ 3. angular momentum.

✓ 4. linear momentum.

23

Question Type : **MCQ**
Question ID : **37135116134**
Option 1 ID : **37135164534**
Option 2 ID : **37135164533**
Option 3 ID : **37135164536**
Option 4 ID : **37135164535**
Status : **Answered**
Chosen Option : **4**

Section : **Chemistry**

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Q.1 What is the cell constant of $\frac{N}{10}$ KCl solution at 25°C, if conductivity and resistance of a solution is $0{\cdot}0112\ \Omega^{-1}cm^{-1}$ and $55{\cdot}0\ \Omega$ respectively?

Ans

✔ 1. $0{\cdot}616\ cm^{-1}$

✘ 2. $0{\cdot}491\ cm^{-1}$

✘ 3. $2{\cdot}0\ cm^{-1}$

✘ 4. $0{\cdot}2\ cm^{-1}$

Question Type : **MCQ**
Question ID : **37135116198**
Option 1 ID : **37135164791**
Option 2 ID : **37135164792**
Option 3 ID : **37135164790**
Option 4 ID : **37135164789**
Status : **Answered**
Chosen Option : **1**

Q.2 Which among the following complexes is a heteroleptic and cationic in nature?

Ans

✘ 1. $[Ni(CO)_4]$

✔ 2. $[Co(NH_3)_4Cl_2)]\ Cl$

✘ 3. $[Pt(NH_3)_2Cl_2)]$

✘ 4. $K_4\ [Fe(CN)_6]$

Question Type : **MCQ**
Question ID : **37135116162**
Option 1 ID : **37135164648**
Option 2 ID : **37135164645**
Option 3 ID : **37135164647**
Option 4 ID : **37135164646**
Status : **Answered**
Chosen Option : **2**

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Q.3 A certain mass of a gas occupies a volume of 2 dm^3 at STP. At what temperature the volume of gas becomes double, keeping the pressure constant?

Ans

✗ 1. $540{\cdot}15^{\circ}C$

✗ 2. $400{\cdot}15^{\circ}C$

✗ 3. $546{\cdot}15^{\circ}C$

✓ 4. $273{\cdot}15^{\circ}C$

Question Type : **MCQ**
Question ID : **37135116170**
Option 1 ID : **37135164679**
Option 2 ID : **37135164680**
Option 3 ID : **37135164677**
Option 4 ID : **37135164678**
Status : **Answered**
Chosen Option : **4**

Q.4 Which type of overlap is involved in formation of O – H bonds in water molecule?

Ans

✗ 1. $sp^2 - P$

✓ 2. $sp^3 - s$

✗ 3. sp - s

✗ 4. $sp^2 - s$

Question Type : **MCQ**
Question ID : **37135116187**
Option 1 ID : **37135164748**
Option 2 ID : **37135164745**
Option 3 ID : **37135164747**
Option 4 ID : **37135164746**
Status : **Answered**
Chosen Option : **2**

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Q.5 The compound which causes antidepressant action on central nervous system is

Ans

✔ 1. phenelzine

✘ 2. penicillin

✘ 3. chloroxylenol

✘ 4. terpineol

Question Type : **MCQ**
Question ID : **37135116192**
Option 1 ID : **37135164766**
Option 2 ID : **37135164767**
Option 3 ID : **37135164765**
Option 4 ID : **37135164768**
Status : **Answered**
Chosen Option : **2**

Q.6 When Butan – 2 -ol is dehydrated using sulphuric acid, the concentration of acid and temperature needed respectively is

Ans

✔ 1. 60 % conc. and 373 K

✘ 2. 20 % conc. and 373 K

✘ 3. 20 % conc. and 363 K

✘ 4. 95 % conc. and 373 K

Question Type : **MCQ**
Question ID : **37135116180**
Option 1 ID : **37135164719**
Option 2 ID : **37135164717**
Option 3 ID : **37135164718**
Option 4 ID : **37135164720**
Status : **Answered**
Chosen Option : **2**

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Q.7 Identify correct decreasing order of ionic radii of lanthanoids.

Ans

1. ✗ Sm > Gd > Ce > Pm
2. ✗ Gd > Pm > Ce > Sm
3. ✓ Ce > Pm > Sm > Gd
4. ✗ Pm > Sm > Ce > Gd

Question Type : **MCQ**
Question ID : **37135116168**
Option 1 ID : **37135164672**
Option 2 ID : **37135164669**
Option 3 ID : **37135164670**
Option 4 ID : **37135164671**
Status : **Answered**
Chosen Option : **4**

Q.8 Which among the following regents is used for conversion of glucose to glucoxime?

Ans

1. ✗ HCN
2. ✗ Br_2 water
3. ✓ Hydroxylamine
4. ✗ dilute Nitric acid

Question Type : **MCQ**
Question ID : **37135116200**
Option 1 ID : **37135164797**
Option 2 ID : **37135164798**
Option 3 ID : **37135164799**
Option 4 ID : **37135164800**
Status : **Answered**
Chosen Option : **3**

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Q.9 What is the relative rate of SN^1 reaction for $(CH_3)_2CH\text{-}Br$?

Ans

✗ 1. 10^6

✗ 2. Less than 10^{-4}

✗ 3. 0.02

✓ 4. 1·0

Question Type : **MCQ**
Question ID : **37135116157**
Option 1 ID : **37135164626**
Option 2 ID : **37135164627**
Option 3 ID : **37135164628**
Option 4 ID : **37135164625**
Status : **Answered**
Chosen Option : **4**

Q.10 What is IUPAC name of mesityl oxide?

Ans

✗ 1. 4 – Methylbenzaldehyde

✗ 2. 2 – Bromohexan-3-one

✓ 3. 4 – Methylpent-3-en-2-one

✗ 4. 1 – Phenylbutan-2-one

Question Type : **MCQ**
Question ID : **37135116193**
Option 1 ID : **37135164772**
Option 2 ID : **37135164771**
Option 3 ID : **37135164770**
Option 4 ID : **37135164769**
Status : **Answered**
Chosen Option : **3**

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Q.11 What is the product formed when bauxite ore is treated with sodium hydroxide?

Ans

✔ 1. Sodium meta aluminate

✘ 2. Aluminium hydroxide

✘ 3. Sodium aluminate

✘ 4. Sodium hydrogen carbonate

Question Type : **MCQ**
Question ID : **37135116177**
Option 1 ID : **37135164708**
Option 2 ID : **37135164705**
Option 3 ID : **37135164707**
Option 4 ID : **37135164706**
Status : **Answered**
Chosen Option : **1**

Q.12 What is the symbol of element if it's atomic number is 116?

Ans

✘ 1. Uus

✘ 2. Uut

✔ 3. Uuh

✘ 4. Uun

Question Type : **MCQ**
Question ID : **37135116166**
Option 1 ID : **37135164664**
Option 2 ID : **37135164663**
Option 3 ID : **37135164661**
Option 4 ID : **37135164662**
Status : **Answered**
Chosen Option : **4**

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Q.13 Among the following isomeric amines, an amine having highest boiling point is

Ans

✗ 1. diethylamine

✓ 2. n – butylamine

✗ 3. tert – butylamine

✗ 4. ethyldimethylamine

Question Type : **MCQ**
Question ID : **37135116189**
Option 1 ID : **37135164755**
Option 2 ID : **37135164753**
Option 3 ID : **37135164754**
Option 4 ID : **37135164756**
Status : **Answered**
Chosen Option : **2**

Q.14 What type of hybridisation results in tetrahedral geometry?

Ans

✗ 1. sp^2

✗ 2. sp

✓ 3. sp^3

✗ 4. dsp^2

Question Type : **MCQ**
Question ID : **37135116179**
Option 1 ID : **37135164714**
Option 2 ID : **37135164713**
Option 3 ID : **37135164715**
Option 4 ID : **37135164716**
Status : **Answered**
Chosen Option : **3**

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Q.15

Identify product B obtained in following reaction.

$$CH_3 - CH_3 \xrightarrow[\Delta]{HNO_2} A \xrightarrow[ether]{LiAlH_4} B$$

Ans

✗ 1. Ethanoic acid

✗ 2. Ethanal

✗ 3. Ethanol

✓ 4. Ethanamine

Question Type : **MCQ**
Question ID : **37135116188**
Option 1 ID : **37135164751**
Option 2 ID : **37135164749**
Option 3 ID : **37135164750**
Option 4 ID : **37135164752**
Status : **Answered**
Chosen Option : **3**

Q.16

What is the molar conductivity at infinite dilution of $CaCl_2$, if the molar conductivity of Ca^{2+} ion and Cl^- ion at infinite dilution is 119 and 71 Ω^{-1} cm^2 mol^{-1} ?

Ans

✗ 1. $431{\cdot}0\ \Omega^{-1}cm^2mol^{-1}$

✗ 2. $341{\cdot}0\ \Omega^{-1}cm^2mol^{-1}$

✓ 3. $261{\cdot}0\ \Omega^{-1}cm^2mol^{-1}$

✗ 4. $126{\cdot}0\ \Omega^{-1}cm^2mol^{-1}$

Question Type : **MCQ**
Question ID : **37135116196**
Option 1 ID : **37135164781**
Option 2 ID : **37135164784**
Option 3 ID : **37135164783**
Option 4 ID : **37135164782**
Status : **Answered**
Chosen Option : **4**

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Q.17 Lithium crystallises into body centered cubic structure. What is the radius of lithium if edge length of it's unit cell is 351 pm?

Ans

✔ 1. 151·98 pm

✗ 2. 300·50 pm

✗ 3. 75·50 pm

✗ 4. 240·80 pm

Question Type : **MCQ**
Question ID : **37135116169**
Option 1 ID : **37135164675**
Option 2 ID : **37135164673**
Option 3 ID : **37135164676**
Option 4 ID : **37135164674**
Status : **Answered**
Chosen Option : **1**

Q.18 Which among the following polymer is used to make crockeries?

Ans

✔ 1. Melamine

✗ 2. HDPE

✗ 3. Buna - S

✗ 4. Buna - N

Question Type : **MCQ**
Question ID : **37135116199**
Option 1 ID : **37135164795**
Option 2 ID : **37135164796**
Option 3 ID : **37135164793**
Option 4 ID : **37135164794**
Status : **Answered**
Chosen Option : **1**

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Q.19 Which of the following compounds is obtained when benzoic acid is treated with conc. H_2SO_4 and conc. HNO_3

Ans

✗ 1. 2,4,6 trinitrobenzoic acid

✗ 2. O – Nitrobenzoic acid

✓ 3. m – Nitrobenzoic acid

✗ 4. p – Nitrobenzoic acid

Question Type : **MCQ**
Question ID : **37135116186**
Option 1 ID : **37135164744**
Option 2 ID : **37135164741**
Option 3 ID : **37135164742**
Option 4 ID : **37135164743**
Status : **Answered**
Chosen Option : **1**

Q.20 If side chain group -R for amino acid is $-CH_2OH$ identify the amino acid from following?

Ans

✗ 1. Arginine

✗ 2. Tyrosine

✓ 3. Serine

✗ 4. Proline

Question Type : **MCQ**
Question ID : **37135116197**
Option 1 ID : **37135164788**
Option 2 ID : **37135164785**
Option 3 ID : **37135164786**
Option 4 ID : **37135164787**
Status : **Answered**
Chosen Option : **1**

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Q.21 For the reaction $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ if the rate of disappearance of NH_3 is $3{\cdot}6 \times 10^{-3}$ M/s. What is the rate of formation of water?

Ans

✗ 1. 4.0×10^{4} M/s

✗ 2. 3.6×10^{-3} M/s

✗ 3. 6.0×10^{-4} M/s

✓ 4. 5.4×10^{-3} M/s

Question Type : **MCQ**
Question ID : **37135116153**
Option 1 ID : **37135164611**
Option 2 ID : **37135164610**
Option 3 ID : **37135164612**
Option 4 ID : **37135164609**
Status : **Answered**
Chosen Option : **4**

Q.22 Osmotic pressure of one molar solution at 27°C is (R = 0·082)

Ans

✗ 1. 2·46 atm

✗ 2. 12·1 atm

✓ 3. 24·6 atm

✗ 4. 1·21 atm

Question Type : **MCQ**
Question ID : **37135116185**
Option 1 ID : **37135164738**
Option 2 ID : **37135164739**
Option 3 ID : **37135164740**
Option 4 ID : **37135164737**
Status : **Answered**
Chosen Option : **3**

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Q.23

Identify the oxidation state of Cr in $K_3\,[Cr(C_2O_4)_3]$

Ans

✔ 1. $+3$

✘ 2. $+2$

✘ 3. $+6$

✘ 4. $+5$

Question Type : **MCQ**
Question ID : **37135116195**
Option 1 ID : **37135164778**
Option 2 ID : **37135164777**
Option 3 ID : **37135164780**
Option 4 ID : **37135164779**
Status : **Answered**
Chosen Option : **1**

Q.24

Which among the following is a dihydric phenol?

Ans

✘ 1. P-cresol

✘ 2. Phloroglucinol

✔ 3. Catechol

✘ 4. Pyrogallol

Question Type : **MCQ**
Question ID : **37135116181**
Option 1 ID : **37135164721**
Option 2 ID : **37135164723**
Option 3 ID : **37135164724**
Option 4 ID : **37135164722**
Status : **Answered**
Chosen Option : **3**

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Q.25 Which among the following halogen does not form polyhalide ion?

Ans

✗ 1. Cl

✗ 2. Br

✗ 3. I

✓ 4. F

Question Type : **MCQ**
Question ID : **37135116173**
Option 1 ID : **37135164690**
Option 2 ID : **37135164691**
Option 3 ID : **37135164692**
Option 4 ID : **37135164689**
Status : **Answered**
Chosen Option : **4**

Q.26 The rate law for the reaction $A+B+C \longrightarrow$ Product is expressed as Rate $= K[A]^2[B]^1[C]^0$. What is the overall order of the reaction?

Ans

✓ 1. 3

✗ 2. 0

✗ 3. 1

✗ 4. 2

Question Type : **MCQ**
Question ID : **37135116155**
Option 1 ID : **37135164617**
Option 2 ID : **37135164620**
Option 3 ID : **37135164619**
Option 4 ID : **37135164618**
Status : **Answered**
Chosen Option : **1**

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Q.27 What is the number of atoms present per unit cell of aluminium having edge length 4 A°?
(If density of Al = 2·7 g cm^{-3}, At. mass of Al=27)

Ans

✗ 1. 8

✗ 2. 1

✗ 3. 2

✓ 4. 4

Question Type : **MCQ**
Question ID : **37135116174**
Option 1 ID : **37135164693**
Option 2 ID : **37135164696**
Option 3 ID : **37135164695**
Option 4 ID : **37135164694**
Status : **Answered**
Chosen Option : **4**

Q.28 Which among following is true for the value of Henry's law constant K ?

Ans

✗ 1.
is greater for gases with higher solubilities

✗ 2.
first increases and then decreases with increase in temperature

✓ 3.
increases with increase in temperature

✗ 4. is same for all gases

Question Type : **MCQ**
Question ID : **37135116191**
Option 1 ID : **37135164762**
Option 2 ID : **37135164764**
Option 3 ID : **37135164761**
Option 4 ID : **37135164763**
Status : **Answered**
Chosen Option : **4**

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Q.29 When SO_2 is passed through acidified $K_2Cr_2O_7$, the process that takes place is

Ans

✗ 1. the solution turns blue

✗ 2. the solution is decolourised

✗ 3. SO_2 is reduced

✓ 4. green $Cr_2(SO_4)_3$ is formed

Question Type : **MCQ**
Question ID : **37135116171**
Option 1 ID : **37135164683**
Option 2 ID : **37135164684**
Option 3 ID : **37135164682**
Option 4 ID : **37135164681**
Status : **Answered**
Chosen Option : **4**

Q.30 Which among the following is powerful bleaching and oxidising agent?

Ans

✓ 1. Cl_2

✗ 2. SO_2

✗ 3. HI

✗ 4. PH_3

Question Type : **MCQ**
Question ID : **37135116172**
Option 1 ID : **37135164686**
Option 2 ID : **37135164685**
Option 3 ID : **37135164687**
Option 4 ID : **37135164688**
Status : **Answered**
Chosen Option : **1**

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Q.31

Resonance is NOT exhibited by

Ans

✔ 1. cyclohexane

✘ 2. aniline

✘ 3. nitrobenzene

✘ 4. phenol

Question Type : **MCQ**
Question ID : **37135116156**
Option 1 ID : **37135164624**
Option 2 ID : **37135164622**
Option 3 ID : **37135164623**
Option 4 ID : **37135164621**
Status : **Answered**
Chosen Option : **1**

Q.32

Which statement from following is true for a complex hexamine cobalt (III) chloride?

Ans

✘ 1.

In this coordination number of cobalt is 9

✔ 2.

In this oxidation state of cobalt is +3

✘ 3. It is a heteroleptic complex

✘ 4. It is an anionic complex

Question Type : **MCQ**
Question ID : **37135116164**
Option 1 ID : **37135164656**
Option 2 ID : **37135164655**
Option 3 ID : **37135164653**
Option 4 ID : **37135164654**
Status : **Answered**
Chosen Option : **2**

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Q.33 Heat of combustion of $C_{(s)}$, $H_{2(g)}$ and $C_2H_{6(g)}$ are $-x_1$, $-x_2$ and $-x_3$ respectively. Hence heat of formation of $C_2H_{6(g)}$ is

Ans

✗ 1. $-x_1 - x_2 + x_3$

✓ 2. $-2x_1 - 3x_2 + x_3$

✗ 3. $x_1 + x_2 - x_3$

✗ 4. $-x_3 + 2x_1 + 3x_2$

Question Type : **MCQ**
Question ID : **37135116161**
Option 1 ID : **37135164641**
Option 2 ID : **37135164642**
Option 3 ID : **37135164644**
Option 4 ID : **37135164643**
Status : **Answered**
Chosen Option : **4**

Q.34 Caesium is used in

Ans

✓ 1. devising photo electric cells

✗ 2. air conditioning plants

✗ 3. extraction of boron

✗ 4. fast breeder nuclear reactors

Question Type : **MCQ**
Question ID : **37135116163**
Option 1 ID : **37135164650**
Option 2 ID : **37135164652**
Option 3 ID : **37135164649**
Option 4 ID : **37135164651**
Status : **Answered**
Chosen Option : **1**

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Q.35 How many optical isomers are possible for a compound having four asymmetric carbon atoms?

Ans

✔ 1. 16

✘ 2. 8

✘ 3. 12

✘ 4. 4

Question Type : **MCQ**
Question ID : **37135116160**
Option 1 ID : **37135164640**
Option 2 ID : **37135164638**
Option 3 ID : **37135164639**
Option 4 ID : **37135164637**
Status : **Answered**
Chosen Option : **1**

Q.36 Which among the following is true for Balz-Schiemann reaction?

Ans

✘ 1.

In this Ar - Cl is obtained from Ar – $N_2^+ X^-$

✘ 2.

It is useful for preparation of nitrobenzene from benzene diazonium salts

✘ 3.

In this Ar – CN is obtained from Ar – $N_2^+ X^-$

✔ 4.

In this Ar - F is obtained from Ar – $N_2^+ X^-$

Question Type : **MCQ**
Question ID : **37135116190**
Option 1 ID : **37135164759**
Option 2 ID : **37135164757**
Option 3 ID : **37135164760**
Option 4 ID : **37135164758**
Status : **Answered**
Chosen Option : **4**

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Q.37 Which among following compounds contains phantom atom?

Ans

✔ 1. CH_3COOH

✘ 2. CH_3CH_2Cl

✘ 3. $CH_3CH_2NH_2$

✘ 4. $CH_3CH_2CH_2OH$

Question Type : **MCQ**
Question ID : **37135116159**
Option 1 ID : **37135164635**
Option 2 ID : **37135164633**
Option 3 ID : **37135164636**
Option 4 ID : **37135164634**
Status : **Answered**
Chosen Option : **1**

Q.38 Energy required to dissociate 16g $O_{2(g)}$ into free atoms is x kJ. The value of bond enthalpy of O=O bond is

Ans

✔ 1. $2x$ kJ

✘ 2. $\frac{x}{2}$ kJ

✘ 3. $4x$ kJ

✘ 4. $16x$ kJ

Question Type : **MCQ**
Question ID : **37135116178**
Option 1 ID : **37135164710**
Option 2 ID : **37135164709**
Option 3 ID : **37135164711**
Option 4 ID : **37135164712**
Status : **Answered**
Chosen Option : **1**

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Q.39 What is the mass percentage of carbon in urea? (mol. mass of urea = 60 g mol^{-1})

Ans

✗ 1. 28·0 %

✓ 2. 20·0 %

✗ 3. 26·67 %

✗ 4. 46·67 %

Question Type : **MCQ**
Question ID : **37135116175**
Option 1 ID : **37135164699**
Option 2 ID : **37135164700**
Option 3 ID : **37135164697**
Option 4 ID : **37135164698**
Status : **Answered**
Chosen Option : **2**

Q.40 Which is true for heat and temperature?

Ans

✓ 1. Extensive and intensive properties respectively

✗ 2. Intensive and extensive properties respectively

✗ 3. Both are extensive properties

✗ 4. Both are intensive properties

Question Type : **MCQ**
Question ID : **37135116154**
Option 1 ID : **37135164615**
Option 2 ID : **37135164616**
Option 3 ID : **37135164614**
Option 4 ID : **37135164613**
Status : **Answered**
Chosen Option : **4**

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Q.41

Which of the following is used as an antiseptic in soap?

Ans

✗ 1. Iodoform

✗ 2. Boric acid

✗ 3. Tincture iodine

✓ 4. Bithional

Question Type : **MCQ**
Question ID : **37135116151**
Option 1 ID : **37135164601**
Option 2 ID : **37135164603**
Option 3 ID : **37135164604**
Option 4 ID : **37135164602**
Status : **Answered**
Chosen Option : **4**

Q.42

Which of the following halogens combine with dihydrogen at lowest temperature?

Ans

✗ 1. Iodine

✓ 2. Fluorine

✗ 3. Bromine

✗ 4. Chlorine

Question Type : **MCQ**
Question ID : **37135116183**
Option 1 ID : **37135164732**
Option 2 ID : **37135164731**
Option 3 ID : **37135164730**
Option 4 ID : **37135164729**
Status : **Answered**
Chosen Option : **1**

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Q.43

Identify product 'C' in following reaction.

$$\text{Propylene dibromide} \xrightarrow[\text{Alcohol}]{\text{Zn. }\Delta} A \xrightarrow{HBr} B \xrightarrow[\text{ether}]{Na} C$$

Ans

✗ 1. 2 - Bromobutane

✗ 2. Isobutane

✓ 3. 2, 3 – dimethyl butane

✗ 4. 1, 2 – dibromo butane

Question Type : **MCQ**
Question ID : **37135116152**
Option 1 ID : **37135164605**
Option 2 ID : **37135164607**
Option 3 ID : **37135164608**
Option 4 ID : **37135164606**
Status : **Answered**
Chosen Option : **3**

Q.44

Which of the following oxides is NOT volatile?

Ans

✗ 1. AS_2O_3

✓ 2. ZnO

✗ 3. P_2O_5

✗ 4. SO_2

Question Type : **MCQ**
Question ID : **37135116176**
Option 1 ID : **37135164702**
Option 2 ID : **37135164704**
Option 3 ID : **37135164701**
Option 4 ID : **37135164703**
Status : **Answered**
Chosen Option : **2**

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Q.45 The edge length of fcc type unit cell of copper having atomic radius 127·6 pm is equal to

Ans

✗ 1. 295 pm

✓ 2. 361 pm

✗ 3. 331 pm

✗ 4. 378 pm

Question Type : **MCQ**
Question ID : **37135116194**
Option 1 ID : **37135164773**
Option 2 ID : **37135164775**
Option 3 ID : **37135164774**
Option 4 ID : **37135164776**
Status : **Answered**
Chosen Option : **2**

Q.46 Which among the following is a cross-linked polymer?

Ans

✗ 1. PVC

✗ 2. Orlon

✓ 3. Vulcanised rubber

✗ 4. Polypropylene

Question Type : **MCQ**
Question ID : **37135116158**
Option 1 ID : **37135164631**
Option 2 ID : **37135164632**
Option 3 ID : **37135164629**
Option 4 ID : **37135164630**
Status : **Answered**
Chosen Option : **3**

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Q.47 Which among following compounds in obtained when calcium formate is dry distilled alone?

Ans

✗ 1. Methanoic acid

✓ 2. Methanal

✗ 3. Methanol

✗ 4. Methoxy methane

Question Type : **MCQ**
Question ID : **37135116184**
Option 1 ID : **37135164733**
Option 2 ID : **37135164734**
Option 3 ID : **37135164735**
Option 4 ID : **37135164736**
Status : **Answered**
Chosen Option : **2**

Q.48 A solution is 0·25% by mass. What is the weight of solvent containing 1·25g solute ?

Ans

✓ 1. 498·75 g

✗ 2. 300 g

✗ 3. 600 g

✗ 4. 200 g

Question Type : **MCQ**
Question ID : **37135116165**
Option 1 ID : **37135164659**
Option 2 ID : **37135164658**
Option 3 ID : **37135164660**
Option 4 ID : **37135164657**
Status : **Answered**
Chosen Option : **1**

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Q.49 What is IUPAC name of 3 – chloropropyl ethyl ether?

Ans

1. 3– Chloro-1-propoxyethane
2. 3 – Chloro-1- ethoxypropane
3. 1– Chloro-3-propoxyethane
4. 1 – Chloro-3-ethoxypropane

Question Type : **MCQ**
Question ID : **37135116182**
Option 1 ID : **37135164728**
Option 2 ID : **37135164726**
Option 3 ID : **37135164727**
Option 4 ID : **37135164725**
Status : **Answered**
Chosen Option : **2**

Q.50 Which of the following can form colloidal sol with water?

Ans

1. Common salt
2. Starch
3. Glucose
4. Ammonium sulphate

Question Type : **MCQ**
Question ID : **37135116167**
Option 1 ID : **37135164665**
Option 2 ID : **37135164667**
Option 3 ID : **37135164666**
Option 4 ID : **37135164668**
Status : **Answered**
Chosen Option : **3**

Section : **Mathematics**

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Q.1

The area of the region bounded by the curve $y = log\, x$, x-axis and the lines $x = 1,\ x = e$ is

Ans

✗ 1. $\frac{1}{e}$ sq. units

✓ 2. 1 sq. units

✗ 3. 4 sq. units

✗ 4. $\frac{1}{2}$ sq. units

Question Type : **MCQ**
Question ID : **37135116235**
Option 1 ID : **37135164937**
Option 2 ID : **37135164939**
Option 3 ID : **37135164940**
Option 4 ID : **37135164938**
Status : **Answered**
Chosen Option : **2**

Q.2

The measure of the acute angle between the lines given by the equation $3x^2 - 4\sqrt{3}\,xy + 3y^2 = 0$ is

Ans

✗ 1. 45°

✗ 2. 60°

✗ 3. 70°

✓ 4. 30°

Question Type : **MCQ**
Question ID : **37135116250**
Option 1 ID : **37135164998**
Option 2 ID : **37135164999**
Option 3 ID : **37135165000**
Option 4 ID : **37135164997**
Status : **Answered**
Chosen Option : **4**

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Q.3

For a sequence (t_n) if $s_n = 7\,(3^n - 1)$, then $t_n =$

Ans

✗ 1. $(7)\,3^{n-1}$

✗ 2. $(14)\,3^{n+1}$

✓ 3. $(14)\,3^{n-1}$

✗ 4. $(7)\,3^{n+1}$

Question Type : **MCQ**
Question ID : **37135116234**
Option 1 ID : **37135164935**
Option 2 ID : **37135164933**
Option 3 ID : **37135164934**
Option 4 ID : **37135164936**
Status : **Answered**
Chosen Option : **3**

Q.4

The cumulative distribution function of a continuous random variable X is given by

$F(X = x) = \frac{\sqrt{x}}{2}$, then $P[X > 1]$ is

Ans

✗ 1. $\frac{1}{3}$

✗ 2. $\frac{1}{\sqrt{2}}$

✓ 3. $\frac{1}{2}$

✗ 4. $\frac{1}{4}$

Question Type : **MCQ**
Question ID : **37135116218**
Option 1 ID : **37135164870**
Option 2 ID : **37135164871**
Option 3 ID : **37135164869**
Option 4 ID : **37135164872**
Status : **Answered**
Chosen Option : **1**

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Q.5

If $\int x^x (1 + logx)\, dx = k\ x^x + c$, then $k =$

Ans

✔ 1. $log_e e$

✗ 2. $log_e\left(\frac{1}{e^2}\right)$

✗ 3. $log_e(e^2)$

✗ 4. $log_e\left(\frac{1}{e}\right)$

Question Type : **MCQ**
Question ID : **37135116241**
Option 1 ID : **37135164962**
Option 2 ID : **37135164964**
Option 3 ID : **37135164961**
Option 4 ID : **37135164963**
Status : **Answered**
Chosen Option : **1**

Q.6 A particle moves according to the law $s = t^3 - 6t^2 + 9t + 25$. The displacement of the particle at the time when its acceleration is zero , is

Ans

✗ 1. 0 units

✗ 2. −27 units

✔ 3. 27 units

✗ 4. 9 units

Question Type : **MCQ**
Question ID : **37135116204**
Option 1 ID : **37135164813**
Option 2 ID : **37135164815**
Option 3 ID : **37135164816**
Option 4 ID : **37135164814**
Status : **Answered**
Chosen Option : **3**

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Q.7 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. 8·64 years

✗ 2. 6·8 years

✗ 3. 10·27 years

✗ 4. 4·3 years

Question Type : **MCQ**
Question ID : **37135116243**
Option 1 ID : **37135164969**
Option 2 ID : **37135164972**
Option 3 ID : **37135164971**
Option 4 ID : **37135164970**
Status : **Answered**
Chosen Option : **4**

Q.8 If $f(x) = \frac{2x+3}{3x-2}$, $x \neq \frac{2}{3}$ then f 0 f is

Ans

✗ 1. an even function

✗ 2. not defined for all $x \in R$

✗ 3. a constant function

✔ 4. an odd function

Question Type : **MCQ**
Question ID : **37135116214**
Option 1 ID : **37135164855**
Option 2 ID : **37135164854**
Option 3 ID : **37135164853**
Option 4 ID : **37135164856**
Status : **Answered**
Chosen Option : **2**

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Q.9

If $\int_0^1 (5x^2 - 3x + k)\ dx = 0$, then $k =$

Ans

✗ 1. $\frac{1}{3}$

✗ 2. $\frac{1}{6}$

✗ 3. $\frac{-1}{3}$

✓ 4. $\frac{-1}{6}$

Question Type : **MCQ**
Question ID : **37135116231**
Option 1 ID : **37135164921**
Option 2 ID : **37135164923**
Option 3 ID : **37135164922**
Option 4 ID : **37135164924**
Status : **Answered**
Chosen Option : **4**

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Q.10

$$\int \frac{e^x}{\sqrt{x}}(1+2x)\,dx =$$

Ans

1. $\frac{1}{\sqrt{x}}\,e^x + c$

2. $2\sqrt{x}\,e^x + c$

3. $\frac{\sqrt{x}}{2}\,e^x + c$

4. $\sqrt{x}\,e^x + c$

Question Type : **MCQ**
Question ID : **37135116247**
Option 1 ID : **37135164987**
Option 2 ID : **37135164986**
Option 3 ID : **37135164988**
Option 4 ID : **37135164985**
Status : **Answered**
Chosen Option : **2**

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Q.11

$$cos\left(\frac{3\pi}{4}+x\right)-\sin\left(\frac{\pi}{4}-x\right)=$$

Ans

✔ 1. $-\sqrt{2}\ cosx$

✘ 2. $-\sqrt{2}\ sinx$

✘ 3. $\sqrt{2}\ cosx$

✘ 4. $\sqrt{2}\ sinx$

Question Type : **MCQ**
Question ID : **37135116236**
Option 1 ID : **37135164944**
Option 2 ID : **37135164942**
Option 3 ID : **37135164943**
Option 4 ID : **37135164941**
Status : **Answered**
Chosen Option : **1**

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Q.12

$$\int_{-\pi}^{\pi} \frac{2x}{1+cos^2x}\ dx =$$

Ans

✗ 1. π

✓ 2. 0

✗ 3. 1

✗ 4. $-\pi$

Question Type : **MCQ**
Question ID : **37135116232**
Option 1 ID : **37135164927**
Option 2 ID : **37135164925**
Option 3 ID : **37135164926**
Option 4 ID : **37135164928**
Status : **Answered**
Chosen Option : **2**

Q.13 If $f(x) = [x]^2 - 5[x] + 6 = 0$, where $[x]$ denotes greatest integer function

then $x \in$

Ans

✗ 1. $(2, 4]$

✗ 2. $[2, 4]$

✓ 3. $[2, 4)$

✗ 4. $(2, 4)$

Question Type : **MCQ**
Question ID : **37135116221**
Option 1 ID : **37135164884**
Option 2 ID : **37135164883**
Option 3 ID : **37135164882**
Option 4 ID : **37135164881**
Status : **Answered**
Chosen Option : **3**

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Q.14

$y = c^2 + \frac{c}{x}$ is the solution of the differential equation

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116226**
Option 1 ID : **37135164902**
Option 2 ID : **37135164903**
Option 3 ID : **37135164901**
Option 4 ID : **37135164904**
Status : **Answered**
Chosen Option : **2**

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Q.15

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

Ans

✔ 1. $-\sqrt{\frac{1-y^2}{1-x^2}}$

✘ 2. $-\sqrt{\frac{1-x^2}{1-y^2}}$

✘ 3. $\sqrt{\frac{1+y^2}{1+x^2}}$

✘ 4. $\sqrt{\frac{1-x^2}{1-y^2}}$

Question Type : **MCQ**
Question ID : **37135116233**
Option 1 ID : **37135164929**
Option 2 ID : **37135164931**
Option 3 ID : **37135164930**
Option 4 ID : **37135164932**
Status : **Answered**
Chosen Option : **1**

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Q.16 If the vectors $(2\hat{i} - q\hat{j} + 3\hat{k})$ and $(4\hat{i} - 5\hat{j} + 6\hat{k})$ are collinear, then the value of q is

Ans

✔ 1. $\frac{5}{2}$

✘ 2. $\frac{-5}{2}$

✘ 3. $\frac{-2}{5}$

✘ 4. $\frac{2}{5}$

Question Type : **MCQ**
Question ID : **37135116238**
Option 1 ID : **37135164950**
Option 2 ID : **37135164951**
Option 3 ID : **37135164952**
Option 4 ID : **37135164949**
Status : **Answered**
Chosen Option : **1**

Q.17 If the vectors $\overline{a}$, $\overline{b}$, $\overline{c}$ are non coplanar, then $\frac{[\overline{a}+2\overline{b} \quad \overline{b}+2\overline{c} \quad \overline{c}+2\overline{a}]}{[\overline{a}\ \overline{b}\ \overline{c}]} =$

Ans

✘ 1. 8

✘ 2. 3

✔ 3. 9

✘ 4. 6

Question Type : **MCQ**
Question ID : **37135116205**
Option 1 ID : **37135164819**
Option 2 ID : **37135164817**
Option 3 ID : **37135164820**
Option 4 ID : **37135164818**
Status : **Answered**
Chosen Option : **3**

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Q.18 With usual notations in ΔABC, if $C = 90°$, then $\tan^{-1}\left(\frac{a}{b+c}\right) + \tan^{-1}\left(\frac{b}{c+a}\right) =$

Ans

✔ 1. $\frac{\pi}{4}$

✘ 2. $\frac{\pi}{6}$

✘ 3. π

✘ 4. $\frac{\pi}{3}$

Question Type : **MCQ**
Question ID : **37135116216**
Option 1 ID : **37135164861**
Option 2 ID : **37135164863**
Option 3 ID : **37135164864**
Option 4 ID : **37135164862**
Status : **Answered**
Chosen Option : **1**

Q.19 The logical expression $[p \wedge (q \vee r)] \vee [\sim r \wedge \sim q \wedge p]$ is equivalent to

Ans

✘ 1. q

✘ 2. $\sim q$

✘ 3. $\sim p$

✔ 4. p

Question Type : **MCQ**
Question ID : **37135116229**
Option 1 ID : **37135164915**
Option 2 ID : **37135164916**
Option 3 ID : **37135164914**
Option 4 ID : **37135164913**
Status : **Answered**
Chosen Option : **4**

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Q.20

If the lines given by $\vec{r} = 2\hat{i} + \lambda(\hat{i} + 2\hat{j} + m\hat{k})$ and $\vec{r} = \hat{i} + \mu(2\hat{i} + \hat{j} + 6\hat{k})$ are perpendicular, then the value of m is

Ans

✗ 1. $\frac{3}{2}$

✗ 2. $\frac{-3}{2}$

✗ 3. $\frac{2}{3}$

✓ 4. $\frac{-2}{3}$

Question Type : **MCQ**
Question ID : **37135116222**
Option 1 ID : **37135164886**
Option 2 ID : **37135164888**
Option 3 ID : **37135164885**
Option 4 ID : **37135164887**
Status : **Answered**
Chosen Option : **4**

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Q.21

If A $(-1, 2, 3)$, B $(3, -2, 1)$, C $(2, 1, 3)$ and D $(-1, -2, 4)$ are the vertices of a tetrahedron, then its volume is

Ans

✔ 1. $\frac{16}{3}$ cu. units

✘ 2. $\frac{13}{6}$ cu. units

✘ 3. $\frac{16}{31}$ cu. units

✘ 4. $\frac{31}{6}$ cu. units

Question Type : **MCQ**
Question ID : **37135116230**
Option 1 ID : **37135164919**
Option 2 ID : **37135164920**
Option 3 ID : **37135164917**
Option 4 ID : **37135164918**
Status : **Answered**
Chosen Option : **1**

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Q.22

If $cosec\theta + cot\theta = 5$, then $sin\theta =$

Ans

✗ 1. $\frac{1}{5}$

✗ 2. $\frac{5}{26}$

✓ 3. $\frac{5}{13}$

✗ 4. $\frac{1}{13}$

Question Type : **MCQ**
Question ID : **37135116244**
Option 1 ID : **37135164973**
Option 2 ID : **37135164976**
Option 3 ID : **37135164974**
Option 4 ID : **37135164975**
Status : **Answered**
Chosen Option : **3**

Q.23 A metal wire 108 meters long is bent to form a rectangle. If the area of the rectangle is maximum, then its dimensions are

Ans

✗ 1. 28 m, 28 m

✓ 2. 27 m, 27 m

✗ 3. 25 m, 25 m

✗ 4. 26 m, 26 m

Question Type : **MCQ**
Question ID : **37135116220**
Option 1 ID : **37135164880**
Option 2 ID : **37135164877**
Option 3 ID : **37135164878**
Option 4 ID : **37135164879**
Status : **Answered**
Chosen Option : **2**

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Q.24 The eccentricity of the hyperbola $16x^2 - 3y^2 - 32x - 12y - 44 = 0$ is

Ans

✔ 1. $\sqrt{\frac{19}{3}}$

✘ 2. $\sqrt{\frac{13}{19}}$

✘ 3. $\frac{\sqrt{19}}{3}$

✘ 4. $\frac{13}{\sqrt{19}}$

Question Type : **MCQ**
Question ID : **37135116240**
Option 1 ID : **37135164960**
Option 2 ID : **37135164959**
Option 3 ID : **37135164957**
Option 4 ID : **37135164958**
Status : **Answered**
Chosen Option : **3**

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Q.25

If $u = \tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$ and $v = \tan^{-1}\left(\frac{2x\sqrt{1-x^2}}{1-2x^2}\right)$, then $\frac{du}{dv}$ at $x = 0$ is

Ans

✔ 1. $\frac{1}{4}$

✘ 2. $\frac{1}{8}$

✘ 3. 1

✘ 4. $\frac{-1}{8}$

Question Type : **MCQ**
Question ID : **37135116207**
Option 1 ID : **37135164828**
Option 2 ID : **37135164826**
Option 3 ID : **37135164825**
Option 4 ID : **37135164827**
Status : **Answered**
Chosen Option : **3**

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Q.26 The direction cosines of a line which lies in ZOX plane and makes an angle of 30° with Z-axis are

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116242**
Option 1 ID : **37135164968**
Option 2 ID : **37135164966**
Option 3 ID : **37135164965**
Option 4 ID : **37135164967**
Status : **Answered**
Chosen Option : **2**

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Q.27

If $\frac{d^2y}{dx^2} = sinx + e^x$; $y(0) = 3$ and $\frac{dy}{dx}$ at $x = 0$ is 4 , then the equation of the curve is

Ans

✗ 1. $y = 4 + 2x + e^x - sinx$

✗ 2. $y = 2 + 3x + e^x - sinx$

✓ 3. $y = 2 + 4x + e^x - sinx$

✗ 4. $y = 4 + 2x + e^x + sinx$

Question Type : **MCQ**
Question ID : **37135116223**
Option 1 ID : **37135164890**
Option 2 ID : **37135164891**
Option 3 ID : **37135164889**
Option 4 ID : **37135164892**
Status : **Answered**
Chosen Option : **4**

Q.28

The general solution of $\tan 3x = 1$ is

Ans

✗ 1. $x = n\pi \ , \ n \in Z$

✓ 2. $x = n\left(\frac{\pi}{3}\right) + \frac{\pi}{12} \ , \ n \in Z$

✗ 3. $x = n\pi + \frac{\pi}{4} \ , \ n \in Z$

✗ 4. $x = n\pi \pm \frac{\pi}{4} \ , \ n \in Z$

Question Type : **MCQ**
Question ID : **37135116210**
Option 1 ID : **37135164839**
Option 2 ID : **37135164838**
Option 3 ID : **37135164837**
Option 4 ID : **37135164840**
Status : **Answered**
Chosen Option : **2**

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Q.29 If $A=\begin{bmatrix}1 & 0 & 2\\ 2 & 1 & 3\\ 0 & 3 & -5\end{bmatrix}$, where A_{ij} is the cofactor of the element a_{ij} of matrix A, then

$a_{21}A_{21}+a_{22}A_{22}+a_{23}A_{23}=$

Ans

✗ 1. -26

✗ 2. 0

✓ 3. -2

✗ 4. 26

Question Type : **MCQ**
Question ID : **37135116228**
Option 1 ID : **37135164910**
Option 2 ID : **37135164909**
Option 3 ID : **37135164912**
Option 4 ID : **37135164911**
Status : **Answered**
Chosen Option : **3**

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Q.30

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

Ans

✗ 1. $\pi - log2$

✓ 2. $\frac{\pi}{2} - log2$

✗ 3. $\pi + log2$

✗ 4. $\frac{\pi}{2} + log2$

Question Type : **MCQ**
Question ID : **37135116239**
Option 1 ID : **37135164956**
Option 2 ID : **37135164955**
Option 3 ID : **37135164953**
Option 4 ID : **37135164954**
Status : **Answered**
Chosen Option : **4**

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Q.31 Bacteria increases at the rate proportional to the number of bacteria present. If the original number N doubles in 4 hours, then the number of bacteria will be 4N in

Ans

✗ 1. 2 hours

✗ 2. 4 hours

✗ 3. 6 hours

✓ 4. 8 hours

Question Type : **MCQ**
Question ID : **37135116248**
Option 1 ID : **37135164989**
Option 2 ID : **37135164990**
Option 3 ID : **37135164991**
Option 4 ID : **37135164992**
Status : **Answered**
Chosen Option : **4**

Q.32 The length of the perpendicular from the point $P(a, b)$ to the line $\frac{x}{a}+\frac{y}{b}=1$ is

Ans

✗ 1. $\left|\frac{\sqrt{a^2+b^2}}{ab}\right|$ units

✓ 2. $\left|\frac{ab}{\sqrt{a^2+b^2}}\right|$ units

✗ 3. $\left|\frac{b^2}{\sqrt{a^2+b^2}}\right|$ units

✗ 4. $\left|\frac{a^2}{\sqrt{a^2+b^2}}\right|$ units

Question Type : **MCQ**
Question ID : **37135116246**
Option 1 ID : **37135164981**
Option 2 ID : **37135164982**
Option 3 ID : **37135164984**
Option 4 ID : **37135164983**
Status : **Answered**
Chosen Option : **2**

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Q.33

If $f(x) = \frac{(81)^x - (9)^x}{(k)^x - 1}$ if $x \neq 0$

$= 2$ if $x = 0$

is continuous at $x = 0$, then the value of k is

Ans

✔ 1. 3

✘ 2. 9

✘ 3. 2

✘ 4. 4

Question Type : **MCQ**
Question ID : **37135116208**
Option 1 ID : **37135164830**
Option 2 ID : **37135164832**
Option 3 ID : **37135164829**
Option 4 ID : **37135164831**
Status : **Answered**
Chosen Option : **1**

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Q.34

If $\frac{1-tan\theta}{1+tan\theta} = \frac{1}{\sqrt{3}}$, where $\theta \in \left(0, \frac{\pi}{2}\right)$, then $\theta =$

Ans

✔ 1. $\frac{\pi}{12}$

✘ 2. $\frac{\pi}{4}$

✘ 3. $\frac{\pi}{6}$

✘ 4. $\frac{\pi}{3}$

Question Type : **MCQ**
Question ID : **37135116237**
Option 1 ID : **37135164945**
Option 2 ID : **37135164946**
Option 3 ID : **37135164947**
Option 4 ID : **37135164948**
Status : **Answered**
Chosen Option : **1**

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Q.35

If the elements of matrix A are the reciprocals of elements of matrix $\begin{bmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{bmatrix}$,

where ω is complex cube root of unity, then

Ans

✗ 1. $A^{-1} = I$

✗ 2. $A^{-1} = A^2$

✗ 3. $A^{-1} = A$

✓ 4. A^{-1} dose not exits

Question Type : **MCQ**
Question ID : **37135116215**
Option 1 ID : **37135164859**
Option 2 ID : **37135164858**
Option 3 ID : **37135164857**
Option 4 ID : **37135164860**
Status : **Answered**
Chosen Option : **3**

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Q.36

$$\sin^{-1}\left(\frac{1}{2}\right)+\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)+\cot^{-1}\left(-\frac{1}{\sqrt{3}}\right)=$$

Ans

✗ 1. $\frac{2\pi}{3}$

✓ 2. π

✗ 3. $\frac{\pi}{6}$

✗ 4. $\frac{\pi}{3}$

Question Type : **MCQ**
Question ID : **37135116212**
Option 1 ID : **37135164845**
Option 2 ID : **37135164848**
Option 3 ID : **37135164846**
Option 4 ID : **37135164847**
Status : **Answered**
Chosen Option : **2**

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Q.37

$$\int \frac{x^2}{(x+1)(x+2)^2}\,dx =$$

Ans

✔ 1. $log|x+1| + \frac{4}{x+2} + c$

✘ 2. $log|x+1| - \frac{4}{x+2} + \frac{3}{(x+2)^2} + c$

✘ 3. $log|x+1| + \frac{1}{x+2} + c$

✘ 4.

$log|x+1| - \frac{4}{x+2} - \frac{3}{(x+2)^2} + c$

Question Type : **MCQ**
Question ID : **37135116217**
Option 1 ID : **37135164866**
Option 2 ID : **37135164868**
Option 3 ID : **37135164865**
Option 4 ID : **37135164867**
Status : **Answered**
Chosen Option : **4**

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Q.38 If the line $\vec{r} = (\hat{i} - 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} + \hat{j} + 2\hat{k})$ is parallel to the plane $\vec{r} \cdot (3\hat{i} - 2\hat{j} - m\hat{k}) = 5$, then value of m is

Ans

✗ 1. -2

✗ 2. -3

✓ 3. 2

✗ 4. 3

Question Type : **MCQ**
Question ID : **37135116206**
Option 1 ID : **37135164821**
Option 2 ID : **37135164824**
Option 3 ID : **37135164823**
Option 4 ID : **37135164822**
Status : **Answered**
Chosen Option : **2**

Q.39 A die is thrown 100 times, then the standard deviation of getting an even number is

Ans

✗ 1. 10

✓ 2. 5

✗ 3. 20

✗ 4. 15

Question Type : **MCQ**
Question ID : **37135116209**
Option 1 ID : **37135164834**
Option 2 ID : **37135164833**
Option 3 ID : **37135164836**
Option 4 ID : **37135164835**
Status : **Answered**
Chosen Option : **2**

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Q.40 The maximum value of $Z = 3x + 5y$, subject to $x + 4y \leq 24,\ y \leq 4,\ x \geq 0,\ y \geq 0$ is

Ans

✗ 1. 20

✗ 2. 120

✓ 3. 72

✗ 4. 44

Question Type : **MCQ**
Question ID : **37135116203**
Option 1 ID : **37135164809**
Option 2 ID : **37135164812**
Option 3 ID : **37135164811**
Option 4 ID : **37135164810**
Status : **Answered**
Chosen Option : **3**

Q.41 If $P(A) = \frac{2}{5}$, $P(B) = \frac{1}{4}$ and $P(A \cup B) = \frac{1}{2}$, then $P(A' \cup B') =$

Ans

✗ 1. $\frac{1}{2}$

✗ 2. $\frac{1}{4}$

✗ 3. $\frac{3}{20}$

✓ 4. $\frac{17}{20}$

Question Type : **MCQ**
Question ID : **37135116225**
Option 1 ID : **37135164900**
Option 2 ID : **37135164899**
Option 3 ID : **37135164897**
Option 4 ID : **37135164898**
Status : **Answered**
Chosen Option : **4**

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Q.42

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

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116202**
Option 1 ID : **37135164808**
Option 2 ID : **37135164806**
Option 3 ID : **37135164807**
Option 4 ID : **37135164805**
Status : **Answered**
Chosen Option : **2**

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Q.43

The p. d. f. of a continuous random variable X is given by

$f(x) = \frac{1}{2}$ if $0 < x < 2$

$= 0$ otherwise

and if $a = P\left(X < \frac{1}{2}\right)$, $b = P\left(X > \frac{3}{2}\right)$, then relation between a and b is

Ans

✔ 1. $a - b = 0$

✘ 2. $2a - b = 0$

✘ 3. $3a - b = 0$

✘ 4. $a - 2b = 0$

Question Type : **MCQ**
Question ID : **37135116219**
Option 1 ID : **37135164874**
Option 2 ID : **37135164873**
Option 3 ID : **37135164875**
Option 4 ID : **37135164876**
Status : **Answered**
Chosen Option : **3**

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Q.44

The general solution of the differential equation $\frac{dy}{dx} + \frac{1}{\sqrt{1-x^2}} = 0$ is

Ans

✗ 1. $y^2 + 2\sin^{-1} x = c$

✗ 2. $x + \sin^{-1} y = c$

✓ 3. $y + \sin^{-1} x = c$

✗ 4. $x^2 + 2\sin^2 y = c$

Question Type : **MCQ**
Question ID : **37135116227**
Option 1 ID : **37135164906**
Option 2 ID : **37135164907**
Option 3 ID : **37135164905**
Option 4 ID : **37135164908**
Status : **Answered**
Chosen Option : **3**

Q.45

If the lines $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{4}$ and $\frac{x-3}{1} = \frac{y-k}{2} = \frac{z}{1}$ intersect, then $k =$

Ans

✓ 1. $\frac{9}{2}$

✗ 2. $\frac{2}{9}$

✗ 3. $\frac{-9}{2}$

✗ 4. $\frac{-2}{9}$

Question Type : **MCQ**
Question ID : **37135116201**
Option 1 ID : **37135164801**
Option 2 ID : **37135164802**
Option 3 ID : **37135164803**
Option 4 ID : **37135164804**
Status : **Answered**
Chosen Option : **1**

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Q.46 The contrapositive of the statement ' If Raju is courageous, then he will join Indian Army' , is

Ans

✗ 1. If Raju does not join Indian Army, then he is courageous.

✓ 2. If Raju does not join Indian Army, then he is not courageous.

✗ 3. If Raju join Indian Army, then he is not courageous

✗ 4. If Raju join Indian Army, then he is courageous.

Question Type : **MCQ**
Question ID : **37135116213**
Option 1 ID : **37135164851**
Option 2 ID : **37135164849**
Option 3 ID : **37135164850**
Option 4 ID : **37135164852**
Status : **Answered**
Chosen Option : **2**

Q.47 If the radius of a circle increases at the rate of 7 cm/sec , then the rate of increase of its area after 10 minutes is

Ans

✓ 1. $1,84,800\ cm^2/sec$

✗ 2. $1,64,800\ cm^2/sec$

✗ 3. $1,88,400\ cm^2/sec$

✗ 4. $1,68,400\ cm^2/sec$

Question Type : **MCQ**
Question ID : **37135116249**
Option 1 ID : **37135164995**
Option 2 ID : **37135164993**
Option 3 ID : **37135164996**
Option 4 ID : **37135164994**
Status : **Answered**
Chosen Option : **4**

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Q.48 If m_1 and m_2 are slopes of the lines represented by $(sec^2\theta - sin^2\theta)x^2 - 2\,tan\theta\,xy + sin^2\theta\,y^2 = 0$, then $|m_1 - m_2| =$

Ans

✗ 1. 1

✓ 2. 2

✗ 3. 4

✗ 4. 3

Question Type : **MCQ**
Question ID : **37135116211**
Option 1 ID : **37135164844**
Option 2 ID : **37135164843**
Option 3 ID : **37135164841**
Option 4 ID : **37135164842**
Status : **Answered**
Chosen Option : **1**

Q.49 If the planes $2x - 5y + z = 8$ and $2\lambda x - 15y + \lambda z + 6 = 0$ are parallel to each other, then value of λ is

Ans

✗ 1. $\frac{1}{3}$

✗ 2. -3

✗ 3. 2

✓ 4. 3

Question Type : **MCQ**
Question ID : **37135116224**
Option 1 ID : **37135164893**
Option 2 ID : **37135164895**
Option 3 ID : **37135164896**
Option 4 ID : **37135164894**
Status : **Answered**
Chosen Option : **4**

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Q.50

The centre and radius of a circle $x = 4a\left(\frac{1-t^2}{1+t^2}\right)$, $y = \frac{8at}{1+t^2}$, are respectively

Ans

1. ✗ $(0, 0)$ and $3a$ units
2. ✓ $(0, 0)$ and $4a$ units
3. ✗ $(0, 0)$ and $2a$ units
4. ✗ $(0, 0)$ and a units

Question Type : **MCQ**
Question ID : **37135116245**
Option 1 ID : **37135164980**
Option 2 ID : **37135164979**
Option 3 ID : **37135164977**
Option 4 ID : **37135164978**
Status : **Answered**
Chosen Option : **3**

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