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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:	12/10/2020
Test Time:	2:30 PM - 5:30 PM
Subject:	PCM

Section : **Physics**

Q.1

A bus is moving with a velocity of 5m/s towards a wall. The driver blows the horn of frequency 165 Hz. If the speed of sound in air is 335m/s , then after reflection of sound wave , the number of beats per second heard by the passengers in the bus will be

Ans

✗ 1. 4

✓ 2. 5

✗ 3. 6

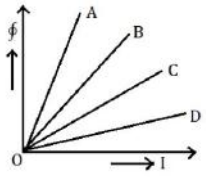
✗ 4. 2

Question Type : **MCQ**
Question ID : **37135115676**
Option 1 ID : **37135162702**
Option 2 ID : **37135162703**
Option 3 ID : **37135162704**
Option 4 ID : **37135162701**
Status : **Answered**
Chosen Option : **3**

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Q.2

A graph of magnetic flux (ϕ) versus current (I) is shown for four inductors A, B, C and D. Larger value of self-inductance is for inductor



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Ans

1. D

2. B

3. C

4. A

Question Type : **MCQ**
Question ID : **37135115662**
Option 1 ID : **37135162648**
Option 2 ID : **37135162646**
Option 3 ID : **37135162647**
Option 4 ID : **37135162645**
Status : **Answered**
Chosen Option : **4**

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Q.3

Kirchhoff's current law and voltage law respectively are based on the law of conservation of

Ans

✔ 1. charge, energy.

✘ 2. charge, momentum.

✘ 3. energy, charge.

✘ 4. momentum, charge.

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Question Type : **MCQ**
Question ID : **37135115677**
Option 1 ID : **37135162707**
Option 2 ID : **37135162708**
Option 3 ID : **37135162705**
Option 4 ID : **37135162706**
Status : **Answered**
Chosen Option : **1**

Q.4

Focal length of a convex lens will be maximum for

Ans

✘ 1. yellow light.

✘ 2. violet light.

✘ 3. blue light.

✔ 4. red light.

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Question Type : **MCQ**
Question ID : **37135115670**
Option 1 ID : **37135162679**
Option 2 ID : **37135162680**
Option 3 ID : **37135162678**
Option 4 ID : **37135162677**
Status : **Answered**
Chosen Option : **2**

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Q.5 An electromagnetic wave of wavelength 'λ' is incident on a photosensitive surface of negligible work function. If the photoelectrons emitted from this surface have the de-Broglie wavelength 'λ_1' then

Ans

✗ 1. $\lambda \propto \frac{1}{\lambda_1}$

✗ 2. $\lambda \propto \lambda_1$

✓ 3. $\lambda \propto \lambda_1^2$

✗ 4. $\lambda \propto \frac{1}{\lambda_1^2}$

Question Type : **MCQ**
Question ID : **37135115686**
Option 1 ID : **37135162743**
Option 2 ID : **37135162741**
Option 3 ID : **37135162742**
Option 4 ID : **37135162744**
Status : **Answered**
Chosen Option : **1**

Q.6 A pipe open at both ends has length 1m. The air column in the pipe can not resonate for a frequency (Neglect end correction, speed of sound in air = 340 m/s)

Ans

✗ 1. 510 Hz

✓ 2. 85 Hz

✗ 3. 170 Hz

✗ 4. 340 Hz

Question Type : **MCQ**
Question ID : **37135115691**
Option 1 ID : **37135162764**
Option 2 ID : **37135162761**
Option 3 ID : **37135162762**
Option 4 ID : **37135162763**
Status : **Answered**
Chosen Option : **3**

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Q.7 The period of seconds pendulum on a planet, whose mass and radius are three times that of earth, is

Ans

1. $3\sqrt{2}$ second

2. $\sqrt{3}$ second

3. $2\sqrt{3}$ second

4. $2\sqrt{2}$ second

2

Question Type : **MCQ**
Question ID : **37135115652**
Option 1 ID : **37135162607**
Option 2 ID : **37135162608**
Option 3 ID : **37135162606**
Option 4 ID : **37135162605**
Status : **Answered**
Chosen Option : **3**

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Q.8 If three vectors have equal magnitude i.e. $A = B = C$, then the angle between $\vec{A}$ and $\vec{C}$ is 'α'. If $\vec{A} + \vec{B} + \vec{C} = 0$, then the angle between $\vec{A}$ and $\vec{C}$ is 'β', then $\frac{\alpha}{\beta}$ is

Ans

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

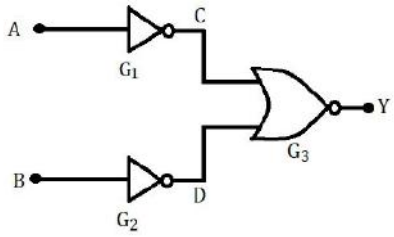
22

Question Type : **MCQ**
Question ID : **37135115690**
Option 1 ID : **37135162757**
Option 2 ID : **37135162759**
Option 3 ID : **37135162760**
Option 4 ID : **37135162758**
Status : **Answered**
Chosen Option : **3**

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Q.9 The resultant gate and its Boolean expression for the given circuit is



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Ans

✗ 1. OR , $A + B$

✗ 2. NAND , $\overline{A \cdot B}$

✗ 3. NOR , $\overline{A + B}$

✓ 4. AND , $A \cdot B$

Question Type : **MCQ**
Question ID : **37135115692**
Option 1 ID : **37135162767**
Option 2 ID : **37135162768**
Option 3 ID : **37135162766**
Option 4 ID : **37135162765**
Status : **Answered**
Chosen Option : **3**

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Q.10 Three particles each of mass 'm_1' are placed at the corners of an equilateral triangle of side '$\frac{L}{3}$'. A particle of mass 'm_2' is placed at the mid point of any one side of triangle. Due to the system of particles the force acting on 'm_2' is

(G = Universal constant of gravitation)

Ans

1. $\frac{12\,G\,m_1m_2}{L^2}$

2. $\frac{2\,G\,m_1m_2}{L^2}$

3. $\frac{4\,G\,m_1m_2}{L^2}$

4. $\frac{8\,G\,m_1m_2}{L^2}$

2

Question Type : **MCQ**
Question ID : **37135115674**
Option 1 ID : **37135162693**
Option 2 ID : **37135162696**
Option 3 ID : **37135162695**
Option 4 ID : **37135162694**
Status : **Answered**
Chosen Option : **1**

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Q.11 When a mercury drop of radius 'R' , breaks into 'n' droplets of equal size, the radius 'r' of each droplet is

Ans

✗ 1. $r = \frac{R}{\sqrt{n}}$

✗ 2. $r = \frac{R}{n}$

✓ 3. $r = \frac{R}{n^{\frac{1}{3}}}$

✗ 4. $r = R\, n^{\frac{1}{3}}$

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Question Type : **MCQ**
Question ID : **37135115684**
Option 1 ID : **37135162736**
Option 2 ID : **37135162733**
Option 3 ID : **37135162734**
Option 4 ID : **37135162735**
Status : **Answered**
Chosen Option : **3**

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Q.12

Sensitivity of a given potentiometer can be decreased by

Ans

✗ 1.

increasing the current through the wire.

✗ 2.

decreasing the current through the wire.

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✗ 3.

decreasing the potential gradient along the wire.

✓ 4.

increasing the potential gradient along the wire.

Question Type : **MCQ**
Question ID : **37135115653**
Option 1 ID : **37135162611**
Option 2 ID : **37135162612**
Option 3 ID : **37135162610**
Option 4 ID : **37135162609**
Status : **Answered**
Chosen Option : **2**

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Q.13

If ' λ_1 ' and ' λ_2 ' are the wavelengths of de-Broglie waves for electrons in first and second Bohr orbits in hydrogen atom, then $\left(\frac{\lambda_1}{\lambda_2}\right)$ is equal to (Energy in 1st Bohr orbit $= -13.6$ eV)

Ans

✗ 1. $\frac{1}{5}$

✗ 2. $\frac{1}{2}$

✓ 3. $\frac{1}{4}$

✗ 4. $\frac{1}{3}$

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Question Type : **MCQ**
Question ID : **37135115651**
Option 1 ID : **37135162604**
Option 2 ID : **37135162601**
Option 3 ID : **37135162603**
Option 4 ID : **37135162602**
Status : **Answered**
Chosen Option : **3**

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Q.14 In Searle's method to find Young's modulus of a wire , when a force of 1·5 kg-wt is applied at its free end, the length of wire is 'a'. When force of 2·5 kg-wt is applied, the length of wire is 'b'. What would be its original length?

Ans

✗ 1. $b - a$

✗ 2. $\frac{b-a}{4}$

✓ 3. $2{\cdot}5\,a - 1{\cdot}5\,b$

✗ 4. $2{\cdot}5\,b - 1{\cdot}5\,a$



Question Type : **MCQ**
Question ID : **37135115693**
Option 1 ID : **37135162771**
Option 2 ID : **37135162772**
Option 3 ID : **37135162770**
Option 4 ID : **37135162769**
Status : **Answered**
Chosen Option : **3**

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Q.15

A light ray of frequency ' ν ' and wavelength 'λ' enters a liquid of refractive index $\frac{3}{2}$.

The ray travels in the liquid with

Ans

1. frequency ν and wavelength $\left(\frac{1}{2}\right)\lambda$.

2. frequency ν and wavelength $\left(\frac{2}{3}\right)\lambda$.

3. frequency $\left(\frac{3}{2}\right)$ ν and wavelength λ.

4. frequency ν and wavelength $\left(\frac{3}{2}\right)\lambda$.

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Question Type : **MCQ**
Question ID : **37135115675**
Option 1 ID : **37135162699**
Option 2 ID : **37135162697**
Option 3 ID : **37135162700**
Option 4 ID : **37135162698**
Status : **Answered**
Chosen Option : **2**

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Q.16

Two black spheres 'P' and 'Q' have radii in the ratio 3:2. The wavelengths of maximum intensity radiation are in the ratio 3:4 respectively. The ratio of radiated power by 'P' to 'Q' is

Ans

1. $\frac{74}{9}$

2. $\frac{64}{9}$

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

4. $\frac{25}{9}$

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Question Type : **MCQ**
Question ID : **37135115687**
Option 1 ID : **37135162748**
Option 2 ID : **37135162747**
Option 3 ID : **37135162745**
Option 4 ID : **37135162746**
Status : **Answered**
Chosen Option : **3**

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Q.17 Two waves with same amplitude and frequency superpose at a point. The ratio of resultant intensities when they arrive in phase to that when they arrive 90° out of phase is $\left[\cos\frac{\pi}{2}=0\right]$

Ans

1. ✗ $\sqrt{2}:1$
2. ✓ $2:1$
3. ✗ $4:1$
4. ✗ $1:2$

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Question Type : **MCQ**
Question ID : **37135115673**
Option 1 ID : **37135162689**
Option 2 ID : **37135162690**
Option 3 ID : **37135162692**
Option 4 ID : **37135162691**
Status : **Answered**
Chosen Option : **2**

Q.18 Under isothermal conditions , two soap bubbles of radii 'r_1' and 'r_2' coalesce to form a big drop. The radius of the big drop is

Ans

1. ✗ $(r_1-r_2)^{\frac{1}{2}}$
2. ✗ $(r_1+r_2)^{\frac{1}{2}}$
3. ✓ $(r_1^2+r_2^2)^{\frac{1}{2}}$
4. ✗ $(r_1^2-r_2^2)^{\frac{1}{2}}$

6

Question Type : **MCQ**
Question ID : **37135115663**
Option 1 ID : **37135162651**
Option 2 ID : **37135162650**
Option 3 ID : **37135162652**
Option 4 ID : **37135162649**
Status : **Answered**
Chosen Option : **3**

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Q.19 The region near the junction of an unbiased p-n junction diode is known as depletion layer. The layer is depleted of

Ans

1. only negative ions.

2. electrons and holes.

3. both positive and negative ions.

4. only positive ions.

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Question Type : **MCQ**
Question ID : **37135115681**
Option 1 ID : **37135162722**
Option 2 ID : **37135162724**
Option 3 ID : **37135162723**
Option 4 ID : **37135162721**
Status : **Answered**
Chosen Option : **3**

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Q.20 A plane wavefront is incident on a water surface at an angle of incidence 60° then it gets refracted at 45°. The ratio of width of incident wavefront to that of refracted wavefront will be $\left[\sin\frac{\pi}{4}=\cos\frac{\pi}{4}=\frac{1}{\sqrt{2}}\ ,\ \sin 60°=\frac{\sqrt{3}}{2}, \cos 60°=\frac{1}{2}\right]$

Ans

✗ 1. $\frac{\sqrt{3}}{2}$

✗ 2. $2\sqrt{3}$

✓ 3. $\frac{1}{\sqrt{2}}$

✗ 4. $\sqrt{2}$

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Question Type : **MCQ**
Question ID : **37135115699**
Option 1 ID : **37135162794**
Option 2 ID : **37135162796**
Option 3 ID : **37135162795**
Option 4 ID : **37135162793**
Status : **Answered**
Chosen Option : **3**

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Q.21

If T is the half-life of a radioactive substance then its instantaneous rate of change of activity is proportional to

Ans

1. $\sqrt{T}$

2. T

3. T^2

4. T^{-2}

18

Question Type : **MCQ**
Question ID : **37135115658**
Option 1 ID : **37135162629**
Option 2 ID : **37135162630**
Option 3 ID : **37135162631**
Option 4 ID : **37135162632**
Status : **Answered**
Chosen Option : **2**

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Q.22 A wheel of radius 2cm is at rest on the horizontal surface. A point P on the circumference of the wheel is in contact with the horizontal surface. When the wheel rolls without slipping on the surface, the displacement of point P after half rotation of wheel is

Ans

✗ 1. $2(\pi^2+2)^{\frac{1}{2}}$ cm

✗ 2. $(\pi^2+2)^{\frac{1}{2}}$ cm

✗ 3. $(\pi^2+4)^{\frac{1}{2}}$ cm

✓ 4. $2(\pi^2+4)^{\frac{1}{2}}$ cm

Question Type : **MCQ**
Question ID : **37135115682**
Option 1 ID : **37135162725**
Option 2 ID : **37135162726**
Option 3 ID : **37135162727**
Option 4 ID : **37135162728**
Status : **Answered**
Chosen Option : **2**

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Q.23

A straight wire of length 0·5m and carrying current of 1·2A is placed in a uniform magnetic field of induction 2T. The magnetic field is perpendicular to the length of the wire. What is the force acting on the wire? [sin90° = 1]

Ans

1. 2·0 N

2. 2·4 N

3. 1·2 N

4. 3·0 N

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Question Type : **MCQ**
Question ID : **37135115660**
Option 1 ID : **37135162639**
Option 2 ID : **37135162638**
Option 3 ID : **37135162640**
Option 4 ID : **37135162637**
Status : **Answered**
Chosen Option : **3**

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Q.24

An elastic material with Young's modulus 'Y' is subjected to a tensile stress 'S'. The elastic energy stored per unit volume of the material will be

Ans

1. $\frac{S^2}{Y}$

2. $\frac{S^2}{2Y}$

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

4. $\frac{S}{2Y}$



Question Type : **MCQ**
Question ID : **37135115659**
Option 1 ID : **37135162634**
Option 2 ID : **37135162635**
Option 3 ID : **37135162633**
Option 4 ID : **37135162636**
Status : **Answered**
Chosen Option : **2**

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Q.25 Three vectors $\vec{A}, \vec{B}$ and $\vec{C}$ are such that $\vec{A} \cdot \vec{B} = \vec{A} \cdot \vec{C} = 0$, then $\vec{A}$ is parallel to

$[\cos 90° = 0]$

Ans

1. ✗ $\vec{B} \cdot \vec{C}$
2. ✓ $\vec{B} \times \vec{C}$
3. ✗ $\vec{C}$
4. ✗ $\vec{B}$

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Question Type : **MCQ**
Question ID : **37135115680**
Option 1 ID : **37135162720**
Option 2 ID : **37135162718**
Option 3 ID : **37135162719**
Option 4 ID : **37135162717**
Status : **Answered**
Chosen Option : **2**

Q.26 The resonant frequency of a series LCR circuit is ' f '. The circuit is now connected to the sinusoidally alternating e.m.f. of frequency ' 2f '. The new reactance X'_L and X'_C are related as

Ans

1. ✓ $X'_C = \frac{1}{4}X'_L$
2. ✗ $X'_C = 2X'_L$
3. ✗ $X'_C = X'_L$
4. ✗ $X'_C = \frac{1}{2}X'_L$

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Question Type : **MCQ**
Question ID : **37135115668**
Option 1 ID : **37135162672**
Option 2 ID : **37135162669**
Option 3 ID : **37135162670**
Option 4 ID : **37135162671**
Status : **Answered**
Chosen Option : **1**

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Q.27

A block of mass 4kg is placed on a horizontal surface having coefficients of static and kinetic friction as 0·5 and 0·4 respectively. If a force, parallel to horizontal surface of 4N is applied to the body, then the force of friction acting on the body will be [$g = 10\ m/s^2$]

Ans

✗ 1. 16 N

✗ 2. 20 N

✗ 3. 8 N

✓ 4. 4 N

Question Type : **MCQ**
Question ID : **37135115685**
Option 1 ID : **37135162738**
Option 2 ID : **37135162737**
Option 3 ID : **37135162739**
Option 4 ID : **37135162740**
Status : **Answered**
Chosen Option : **4**

Q.28

The displacements of two particles executing simple harmonic motion are represented as $y_1 = 2\sin(10t + \theta)$ and $y_2 = 3\cos 10t$. The phase difference between the velocities of these waves is

Ans

✗ 1. $\left(\theta + \frac{\pi}{2}\right)$

✗ 2. $-\theta$

✓ 3. $\left(\theta - \frac{\pi}{2}\right)$

✗ 4. θ

Question Type : **MCQ**
Question ID : **37135115672**
Option 1 ID : **37135162687**
Option 2 ID : **37135162686**
Option 3 ID : **37135162688**
Option 4 ID : **37135162685**
Status : **Answered**
Chosen Option : **2**

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Q.29 A bullet of mass 20g moving with a velocity of 200m/s strikes a target and is brought to rest in $\left(\frac{1}{50}\right)^{th}$ of a second. The impulse and average force of impact are respectively

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Ans

1. 2 Ns , 100 N

2. 4 Ns , 100 N

3. 2 Ns , 200 N

4. 4 Ns , 200 N

Question Type : **MCQ**
Question ID : **37135115698**
Option 1 ID : **37135162792**
Option 2 ID : **37135162790**
Option 3 ID : **37135162791**
Option 4 ID : **37135162789**
Status : **Answered**
Chosen Option : **3**

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Q.30 In a biprism experiment, monochromatic light of wavelength (λ) is used. The distance between two coherent sources is kept constant. If the distance between slit and eyepiece (D) is varied as D_1, D_2, D_3 and D_4, the corresponding measured fringe widths are z_1, z_2, z_3 and z_4 then

Ans

✔ 1.

$$\frac{z_1}{D_1} = \frac{z_2}{D_2} = \frac{z_3}{D_3} = \frac{z_4}{D_4}$$

✘ 2.

$$z_1 D_1 = z_2 D_2 = z_3 D_3 = z_4 D_4$$

✘ 3.

$$z_1\sqrt{D_1} = z_2\sqrt{D_2} = z_3\sqrt{D_3} = z_4\sqrt{D_4}$$

✘ 4.

$$z_1 D_1^2 = z_2 D_2^2 = z_3 D_3^2 = z_4 D_4^2$$

Question Type : **MCQ**
Question ID : **37135115656**
Option 1 ID : **37135162624**
Option 2 ID : **37135162621**
Option 3 ID : **37135162622**
Option 4 ID : **37135162623**
Status : **Answered**
Chosen Option : **2**

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Q.31 If the frequency of incident light falling on a metallic surface is doubled, maximum kinetic energy of emitted photoelectrons

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Ans

✔ 1. increases to slightly more than double.

✗ 2. remains the same.

✗ 3. becomes twice.

✗ 4. decreases to slightly more than double.

Question Type : **MCQ**
Question ID : **37135115679**
Option 1 ID : **37135162713**
Option 2 ID : **37135162714**
Option 3 ID : **37135162716**
Option 4 ID : **37135162715**
Status : **Answered**
Chosen Option : **3**

Q.32 Two strings of same material having lengths as 'L', '2L', and radii '2r', 'r' respectively, are vibrating in the fundamental mode. Tension applied to both the strings is same. The ratio of their respective fundamental frequencies is

8

Ans

✗ 1. 4:3

✗ 2. 1:2

✔ 3. 1:1

✗ 4. 3:4

Question Type : **MCQ**
Question ID : **37135115700**
Option 1 ID : **37135162800**
Option 2 ID : **37135162797**
Option 3 ID : **37135162799**
Option 4 ID : **37135162798**
Status : **Answered**
Chosen Option : **2**

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Q.33 A simple pendulum of length 'L' is suspended from a roof of a trolley. A trolley moves in horizontal direction with an acceleration 'a'. What would be the period of oscillation of a simple pendulum? [g is acceleration due to gravity]

Ans

✔ 1. $2\pi\sqrt{L}\,(a^2+g^2)^{-\frac{1}{4}}$

✘ 2. $2\pi\sqrt{L}\,(a^2+g^2)^{-\frac{1}{2}}$

✘ 3. $2\pi\sqrt{\frac{L}{g+a}}$

✘ 4. $2\pi\sqrt{\frac{L}{g-a}}$

Question Type : **MCQ**
Question ID : **37135115689**
Option 1 ID : **37135162755**
Option 2 ID : **37135162756**
Option 3 ID : **37135162753**
Option 4 ID : **37135162754**
Status : **Answered**
Chosen Option : **2**

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Q.34 In communication system, what is used to extend the range of a communication?

Ans

1. Transducer
2. Attenuation
3. Repeater
4. Modulation

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Question Type : **MCQ**
Question ID : **37135115697**
Option 1 ID : **37135162786**
Option 2 ID : **37135162788**
Option 3 ID : **37135162785**
Option 4 ID : **37135162787**
Status : **Answered**
Chosen Option : **3**

Q.35 Two capacitors of same capacity are first joined in series and then in parallel. The ratio of resultant capacity in series to that in parallel combination will be

Ans

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

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Question Type : **MCQ**
Question ID : **37135115666**
Option 1 ID : **37135162662**
Option 2 ID : **37135162664**
Option 3 ID : **37135162661**
Option 4 ID : **37135162663**
Status : **Answered**
Chosen Option : **2**

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Q.36

Two particles A and B have equal charges but different masses M_A and M_B. After being accelerated through same potential difference enter the region of uniform magnetic field and describe the path of radii R_A and R_B respectively. Then $M_A : M_B$ is

Ans

1. $\frac{R_A}{R_B}$

2. $\frac{R_B}{R_A}$

3. $\left(\frac{R_A}{R_B}\right)^2$

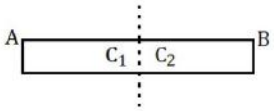
4. $\left(\frac{R_B}{R_A}\right)^2$

Question Type : **MCQ**
Question ID : **37135115688**
Option 1 ID : **37135162751**
Option 2 ID : **37135162752**
Option 3 ID : **37135162749**
Option 4 ID : **37135162750**
Status : **Answered**
Chosen Option : **3**

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Q.37 A bar magnet AB is cut into two equal parts. (as shown in figure). One part is kept over the other so that the pole C_2 is above C_1. If M is the magnetic moment of the original magnet, the magnetic moment of the combination so formed is



Ans

1. ✗ M
2. ✗ $\frac{M}{2}$
3. ✓ Zero
4. ✗ 2M

26

Question Type : **MCQ**
Question ID : **37135115655**
Option 1 ID : **37135162617**
Option 2 ID : **37135162618**
Option 3 ID : **37135162620**
Option 4 ID : **37135162619**
Status : **Answered**
Chosen Option : **1**

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Q.38 Mass of 0·5 kg is attached to a string moving in horizontal circle with angular velocity 10 cycle/min. Keeping the radius constant, tension in the string is made 4 times by increasing angular velocity 'ω'. The value 'ω' of that mass will be

Ans

1. $\frac{1}{3}$ cycle/s

2. $\frac{1}{2}$ cycle/s

3. $\frac{1}{5}$ cycle/s

4. $\frac{1}{4}$ cycle/s

Question Type : **MCQ**
Question ID : **37135115696**
Option 1 ID : **37135162782**
Option 2 ID : **37135162781**
Option 3 ID : **37135162784**
Option 4 ID : **37135162783**
Status : **Answered**
Chosen Option : **4**

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Q.39

A metal sphere of radius 'R' cm is charged with $4\pi\ \mu C$ situated in air. If 'σ' is surface density of charge , 'E' is electric intensity at a distance 'r' from the centre of sphere then 'r' is (ϵ_0= permittivity of free space)

Ans

✗ 1. $R\sqrt{\frac{\epsilon_0 E}{\sigma}}$

✓ 2. $R\sqrt{\frac{\sigma}{\epsilon_0 E}}$

✗ 3. $\sqrt{\frac{\epsilon_0 E}{R\sigma}}$

✗ 4. $\sqrt{\frac{R\sigma}{\epsilon_0 E}}$

12

Question Type : **MCQ**
Question ID : **37135115694**
Option 1 ID : **37135162775**
Option 2 ID : **37135162776**
Option 3 ID : **37135162773**
Option 4 ID : **37135162774**
Status : **Answered**
Chosen Option : **4**

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Q.40

A particle is performing uniform circular motion. If ' θ ' , ' ω ', '∝' and 'a' are its angular displacement, angular velocity, angular acceleration and centripetal acceleration respectively, then which of the following is 'WRONG'?

(' v ' is its linear velocity)

Ans

✗ 1. $\vec{v} \perp \vec{a}$

✗ 2. $\vec{\omega} \perp \vec{v}$

✓ 3. $\vec{\omega} \perp \vec{\alpha}$

✗ 4. $\vec{\omega} \perp \vec{a}$

Question Type : **MCQ**
Question ID : **37135115667**
Option 1 ID : **37135162668**
Option 2 ID : **37135162665**
Option 3 ID : **37135162667**
Option 4 ID : **37135162666**
Status : **Answered**
Chosen Option : **3**

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Q.41 Moment of inertia of a solid sphere about its diameter is 'I'. It is then casted into 27 small spheres of same diameter. The moment of inertia of each new sphere is

Ans

✔ 1. $\frac{I}{243}$

✘ 2. $\frac{I}{122}$

✘ 3. $\frac{I}{31}$

✘ 4. $\frac{I}{62}$

3

Question Type : **MCQ**
Question ID : **37135115678**
Option 1 ID : **37135162709**
Option 2 ID : **37135162710**
Option 3 ID : **37135162712**
Option 4 ID : **37135162711**
Status : **Answered**
Chosen Option : **4**

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Q.42 About black body radiation, which one of the following is 'WRONG' statement ?

Ans ✔ 1.

For all wavelengths , intensity is same.

✘ 2.

All wavelengths are emitted by a black body.

✘ 3.

For longer wavelengths , intensity is less.

✘ 4.

For shorter wavelengths , intensity is more.

9

Question Type : **MCQ**
Question ID : **37135115654**
Option 1 ID : **37135162613**
Option 2 ID : **37135162616**
Option 3 ID : **37135162615**
Option 4 ID : **37135162614**
Status : **Answered**
Chosen Option : **1**

Q.43 Two satellites of masses 'm' and '2m' are revolving in a circular orbit of radius 'r', around the earth. The ratio of their frequencies of revolution will be

Ans ✘ 1. 1:3

✘ 2. 1:2

✔ 3. 1:1

✘ 4. 2:1

2

Question Type : **MCQ**
Question ID : **37135115661**
Option 1 ID : **37135162643**
Option 2 ID : **37135162641**
Option 3 ID : **37135162644**
Option 4 ID : **37135162642**
Status : **Answered**
Chosen Option : **3**

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Q.44 A stationary wave is represented by $y = 10 \sin \frac{\pi x}{4} \cos 20 \pi t$ where 'x' and 'y' are expressed in cm and 't' in second. Distance between two consecutive nodes is

Ans

1. 4 cm
2. 1 cm
3. 8 cm
4. 2 cm

Question Type : **MCQ**
Question ID : **37135115669**
Option 1 ID : **37135162674**
Option 2 ID : **37135162676**
Option 3 ID : **37135162673**
Option 4 ID : **37135162675**
Status : **Answered**
Chosen Option : **1**

Q.45 Five objects of different masses are simultaneously released vertically downwards from height 'h' (in air). Which physical quantity associated with the objects will change at the instant they strike the ground ? (Neglect the air resistance.)

Ans

1. Momentum
2. Time
3. Acceleration
4. Velocity

Question Type : **MCQ**
Question ID : **37135115695**
Option 1 ID : **37135162780**
Option 2 ID : **37135162777**
Option 3 ID : **37135162779**
Option 4 ID : **37135162778**
Status : **Answered**
Chosen Option : **1**

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Q.46

A thin circular ring of mass 'M' and radius 'r' is rotating about its axis with an angular speed 'ω'. Two particles each of mass 'm' are now attached at diametrically opposite points. The angular speed of the ring will become

Ans

✔ 1. $\frac{\omega M}{M+2m}$

✘ 2. $\frac{\omega M}{M+m}$

✘ 3. $\frac{\omega(M-2m)}{M}$

✘ 4. $\frac{\omega(M-2m)}{M+2m}$

3

Question Type : **MCQ**
Question ID : **37135115657**
Option 1 ID : **37135162626**
Option 2 ID : **37135162625**
Option 3 ID : **37135162628**
Option 4 ID : **37135162627**
Status : **Answered**
Chosen Option : **1**

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Q.47 A stray magnetic field does 'NOT' affect the deflection of moving coil galvanometer because

Ans

✗ 1. magnetic field inside galvanometer is zero.

✗ 2. magnetic field is equal to earth's magnetic field.

✓ 3. magnetic field inside galvanometer is very strong.

✗ 4. magnetic field inside galvanometer is very weak.

14

Question Type : **MCQ**
Question ID : **37135115664**
Option 1 ID : **37135162656**
Option 2 ID : **37135162655**
Option 3 ID : **37135162654**
Option 4 ID : **37135162653**
Status : **Answered**
Chosen Option : **1**

Q.48 The susceptibility of tungsten is $6{\cdot}8 \times 10^{-5}$ at temperature 300K. The susceptibility at temperature 400K is

Ans

✓ 1. $5{\cdot}1 \times 10^{-5}$

✗ 2. $6{\cdot}8 \times 10^{-5}$

✗ 3. $3{\cdot}4 \times 10^{-5}$

✗ 4. $4{\cdot}8 \times 10^{-5}$

15

Question Type : **MCQ**
Question ID : **37135115671**
Option 1 ID : **37135162682**
Option 2 ID : **37135162684**
Option 3 ID : **37135162681**
Option 4 ID : **37135162683**
Status : **Answered**
Chosen Option : **4**

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Q.49

The dimensions of magnetic intensity are

Ans

✗ 1. $[L^1\ M^0\ T^1\ I^1]$

✗ 2. $[L^1\ M^0\ T^0\ I^{-1}]$

✓ 3. $[L^{-1}\ M^0\ T^0\ I^1]$

✗ 4. $[L^2\ M^1\ T^0\ I^1]$

15

Question Type : **MCQ**
Question ID : **37135115683**
Option 1 ID : **37135162729**
Option 2 ID : **37135162732**
Option 3 ID : **37135162731**
Option 4 ID : **37135162730**
Status : **Answered**
Chosen Option : **1**

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Q.50 Which one of the following combination of constants has dimensions of time?
[G = constant of gravitation, h = Planck's constant, c = velocity of light]

Ans

✔ 1. $\left[\frac{Gh}{c^5}\right]^{\frac{1}{2}}$

✘ 2. $\left[\frac{Gh}{c}\right]^{\frac{1}{2}}$

✘ 3. $\left[\frac{Gh}{c^4}\right]^{\frac{1}{2}}$

✘ 4. $\left[\frac{Gh}{c^3}\right]^{\frac{1}{2}}$

21

Question Type : **MCQ**
Question ID : **37135115665**
Option 1 ID : **37135162657**
Option 2 ID : **37135162660**
Option 3 ID : **37135162658**
Option 4 ID : **37135162659**
Status : **Answered**
Chosen Option : **3**

Section : **Chemistry**

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Q.1 Which among the following substituent groups decreases the acidic strength of aromatic carboxylic acid ?

Ans

✔ 1. $-NH_2$

✘ 2. $-CN$

✘ 3. $-Cl$

✘ 4. $-NO_2$

Question Type : **MCQ**
Question ID : **37135115742**
Option 1 ID : **37135162968**
Option 2 ID : **37135162965**
Option 3 ID : **37135162966**
Option 4 ID : **37135162967**
Status : **Answered**
Chosen Option : **4**

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Q.2 According to Raoult's law, relative lowering of vapour pressure for a solution containing a non volatile solute is equal to

Ans

✗ 1. mole fraction of solvent

✗ 2. moles of solute

✗ 3. moles of solvent

✓ 4. mole fraction of solute

Question Type : **MCQ**
Question ID : **37135115749**
Option 1 ID : **37135162993**
Option 2 ID : **37135162995**
Option 3 ID : **37135162996**
Option 4 ID : **37135162994**
Status : **Answered**
Chosen Option : **4**

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Q.3

What is the value of primary valence of Co in $CoCl_3$?

Ans

✗ 1. 2

✗ 2. 4

✓ 3. 3

✗ 4. 1

Question Type : **MCQ**
Question ID : **37135115708**
Option 1 ID : **37135162831**
Option 2 ID : **37135162829**
Option 3 ID : **37135162830**
Option 4 ID : **37135162832**
Status : **Answered**
Chosen Option : **3**

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Q.4

When 2 moles of an ideal gas are expanded isothermally from a volume of 12.5 L to 15.0 L against constant external pressure of 760 mm Hg. Calculate the amount of work done in joule ?

Ans

1. $-253{\cdot}25$ J

2. $-190{\cdot}0$ J

3. $-1924{\cdot}0$ J

4. $-25{\cdot}325$ J

Question Type : **MCQ**
Question ID : **37135115734**
Option 1 ID : **37135162933**
Option 2 ID : **37135162935**
Option 3 ID : **37135162936**
Option 4 ID : **37135162934**
Status : **Answered**
Chosen Option : **2**

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Q.5 Which among the following is correct when energy of activation, Ea of the catalyzed reaction decreases at constant temperature and for same concentration ?

Ans

✔ 1. $Ea/_{RT}$ decreases

✘ 2. K decreases

✘ 3. $e^{-Ea/_{RT}}$ decreases

✘ 4. $-Ea/_{RT}$ decreases

Question Type : **MCQ**
Question ID : **37135115701**
Option 1 ID : **37135162801**
Option 2 ID : **37135162804**
Option 3 ID : **37135162803**
Option 4 ID : **37135162802**
Status : **Answered**
Chosen Option : **1**

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Q.6

Which of the following formula represents laughing gas ?

Ans

✔ 1. N_2O

✘ 2. N_2O_5

✘ 3. N_2O_4

✘ 4. N_2O_3

Question Type : **MCQ**
Question ID : **37135115727**
Option 1 ID : **37135162905**
Option 2 ID : **37135162908**
Option 3 ID : **37135162907**
Option 4 ID : **37135162906**
Status : **Answered**
Chosen Option : **1**

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Q.7

Which of the following statements is true for electrolytic cell ?

Ans

1. Oxidation occurs at positive electrode

2. Oxidation occurs at negative electrode

3. Anode is negative and cathode is positive electrode

4. Reduction occurs at positive electrode

Question Type : **MCQ**
Question ID : **37135115703**
Option 1 ID : **37135162811**
Option 2 ID : **37135162810**
Option 3 ID : **37135162809**
Option 4 ID : **37135162812**
Status : **Answered**
Chosen Option : **3**

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Q.8

Identify the type of drug used to reduce pain and irritation of stomach ?

Ans

✗ 1. Tranquilizer

✗ 2. antibiotic

✗ 3. antiseptic

✓ 4. antacid

Question Type : **MCQ**
Question ID : **37135115730**
Option 1 ID : **37135162917**
Option 2 ID : **37135162918**
Option 3 ID : **37135162919**
Option 4 ID : **37135162920**
Status : **Answered**
Chosen Option : **4**

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Q.9

Which of the following alcohols is prepared by acid catalysed hydration of alkenes ?

Ans

✔ 1. Ethanol

✘ 2. Methanol

✘ 3. Propan-1-ol

✘ 4. Butan-1-ol

Question Type : **MCQ**
Question ID : **37135115733**
Option 1 ID : **37135162930**
Option 2 ID : **37135162929**
Option 3 ID : **37135162931**
Option 4 ID : **37135162932**
Status : **Answered**
Chosen Option : **1**

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Q.10

Which among the following formulae represents glycollic acid

Ans

1. $CH_3\text{-}CH(OH)\text{-}COOH$

2. $HOOC\text{-}CH_2\text{-}CH_2\text{-}\underset{\displaystyle COOH}{\underset{|}{CH}}\text{-}NH_2$

3. $HOOC\text{-}CH_2\text{-}\underset{\displaystyle COOH}{\underset{|}{CH}}\text{-}NH_2$

4. $HO\text{-}CH_2\text{-}COOH$

Question Type : **MCQ**
Question ID : **37135115750**
Option 1 ID : **37135162997**
Option 2 ID : **37135162999**
Option 3 ID : **37135163000**
Option 4 ID : **37135162998**
Status : **Answered**
Chosen Option : **1**

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Q.11 What is the mass of an fcc unit cell if mass of one atom of an element is 6×10^{-23} g ?

Ans

1. 24×10^{-22} g

2. 4×10^{-23} g

3. $2{\cdot}4 \times 10^{-22}$ g

4. $2{\cdot}4 \times 10^{-23}$ g

Question Type : **MCQ**
Question ID : **37135115729**
Option 1 ID : **37135162914**
Option 2 ID : **37135162916**
Option 3 ID : **37135162913**
Option 4 ID : **37135162915**
Status : **Answered**
Chosen Option : **3**

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Q.12

Which of the following is a major product obtained in the reaction of isobutylene with hydrogen bromide ?

Ans

1. tert - butyl bromide

2. sec-butyl bromide

3. n - butyl bromide

4. Iso butyl bromide

Question Type : **MCQ**
Question ID : **37135115724**
Option 1 ID : **37135162895**
Option 2 ID : **37135162894**
Option 3 ID : **37135162893**
Option 4 ID : **37135162896**
Status : **Answered**
Chosen Option : **2**

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Q.13

Which of the following equations is correct for heat of sublimation ?

Ans

1. $\Delta_{vap}H = \Delta_{sub}H + \Delta_{fus}H$

2. $\Delta_{sub}H = \Delta_{fus}H - \Delta_{vap}H$

3. $\Delta_{fus}H = \Delta_{sub}H \times \Delta_{vap}H$

4. $\Delta_{sub}H = \Delta_{fus}H + \Delta_{vap}H$

Question Type : **MCQ**
Question ID : **37135115709**
Option 1 ID : **37135162834**
Option 2 ID : **37135162833**
Option 3 ID : **37135162835**
Option 4 ID : **37135162836**
Status : **Answered**
Chosen Option : **4**

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Q.14

Which among the following is a heaviest isotope of water ?

Ans

✗ 1. $T_2{}^{17}O$

✗ 2. $T_2{}^{16}O$

✗ 3. $HD^{18}O$

✓ 4. $T_2{}^{18}O$

Question Type : **MCQ**
Question ID : **37135115726**
Option 1 ID : **37135162902**
Option 2 ID : **37135162901**
Option 3 ID : **37135162904**
Option 4 ID : **37135162903**
Status : **Answered**
Chosen Option : **4**

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Q.15

Which of the following ionic species has highest precipitating power ?

Ans

✗ 1. Cu^{+2}

✗ 2. $SO4^{-2}$

✗ 3. Na^{+}

✓ 4. Al^{+3}

Question Type : **MCQ**
Question ID : **37135115735**
Option 1 ID : **37135162938**
Option 2 ID : **37135162940**
Option 3 ID : **37135162937**
Option 4 ID : **37135162939**
Status : **Answered**
Chosen Option : **2**

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Q.16

IUPAC name of benzylamine is

Ans

1. phenylethanamine

2. phenylmethanamine

3. benzenamine

4. N-methylbenzenamine

Question Type : **MCQ**
Question ID : **37135115719**
Option 1 ID : **37135162876**
Option 2 ID : **37135162875**
Option 3 ID : **37135162873**
Option 4 ID : **37135162874**
Status : **Answered**
Chosen Option : **4**

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Q.17

Half life of first order reaction is 20 minutes. What is the time taken to reduce the initial concentration of the reactant to $\frac{1}{10}$ th ?

Ans

1. 6·6 min

2. 66·56 min

3. 150 min

4. 79·68 min

Question Type : **MCQ**
Question ID : **37135115748**
Option 1 ID : **37135162992**
Option 2 ID : **37135162991**
Option 3 ID : **37135162989**
Option 4 ID : **37135162990**
Status : **Answered**
Chosen Option : **2**

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Q.18 The Henry's law constant for oxygen is $1{\cdot}3 \times 10^{-3}$ mol $dm^{-3}atm^{-1}$. If partial pressure of oxygen is 0·46 atmosphere what is the concentration of dissolved oxygen at 25 °C and 1 atm pressure ?

Ans

✔ 1. $5{\cdot}98 \times 10^{-4}$ mol dm^{-3}

✘ 2. $3{\cdot}53 \times 10^{-4}$ mol dm^{-3}

✘ 3. $5{\cdot}98$ mol dm^{-3}

✘ 4. $2{\cdot}82 \times 10^{-3}$ mol dm^{-3}

Question Type : **MCQ**
Question ID : **37135115738**
Option 1 ID : **37135162949**
Option 2 ID : **37135162951**
Option 3 ID : **37135162952**
Option 4 ID : **37135162950**
Status : **Answered**
Chosen Option : **1**

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Q.19

What is the type of hybridisation and the geometry respectively found in $[CoF_6]^{3-}$?

Ans

1. d^3sp^3 and pentagonal bipyramidal

2. sp^3d^2 and octahedral

3. dsp^3 and trigonal bipyramidal

4. dsp^2 and pentagonal bipyramidal

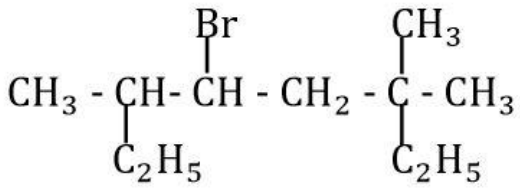
Question Type : **MCQ**
Question ID : **37135115702**
Option 1 ID : **37135162807**
Option 2 ID : **37135162806**
Option 3 ID : **37135162805**
Option 4 ID : **37135162808**
Status : **Answered**
Chosen Option : **1**

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Q.20

I.U.P.A.C. name of the following compound is



Ans

✗ 1.

4-bromo-2-ethyl-2, 5-dimethylheptane

✗ 2.

5-bromo-3, 3, 6-trimethyloctane

✗ 3.

3-bromo-2, 5-diethyl-5-methylhexane

✓ 4.

4-bromo-3, 6, 6-trimethyloctane

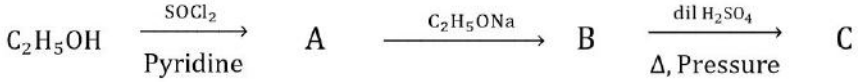
Question Type : **MCQ**
Question ID : **37135115713**
Option 1 ID : **37135162850**
Option 2 ID : **37135162852**
Option 3 ID : **37135162849**
Option 4 ID : **37135162851**
Status : **Answered**
Chosen Option : **3**

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Q.21

Identify product 'C' in following reaction



Ans

1. Ethyl ethanoate

2. Ethanol

3. Ethanoic acid

4. But-2-ene

Question Type : **MCQ**
Question ID : **37135115728**
Option 1 ID : **37135162909**
Option 2 ID : **37135162911**
Option 3 ID : **37135162910**
Option 4 ID : **37135162912**
Status : **Answered**
Chosen Option : **1**

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Q.22

Sodium salt of ∝ - halogen carboxylic acid when heated with sodium nitrite and followed by hydrolysis forms

Ans

✔ 1. nitroalkane

✗ 2. amine

✗ 3. alcohol

✗ 4. amide

Question Type : **MCQ**
Question ID : **37135115710**
Option 1 ID : **37135162838**
Option 2 ID : **37135162839**
Option 3 ID : **37135162840**
Option 4 ID : **37135162837**
Status : **Answered**
Chosen Option : **3**

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Q.23

Which among the following orbitals form Delta (δ) molecular orbitals ?

Ans

✗ 1. d_{xy} and d_{yz} orbitals

✗ 2. d_{z^2} and $d_{x^2-y^2}$ orbitals

✗ 3. d_{yz} and $d_{x^2-y^2}$ orbitals

✓ 4. d_{xy} and $d_{x^2-y^2}$ orbitals

Question Type : **MCQ**
Question ID : **37135115731**
Option 1 ID : **37135162924**
Option 2 ID : **37135162923**
Option 3 ID : **37135162922**
Option 4 ID : **37135162921**
Status : **Answered**
Chosen Option : **1**

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Q.24

What is the position of elements La (Z=57) and Ce (Z= 58) respectively in the long form of periodic table ?

Ans

1. La = Group-3, Period-6
   Ce = Group-3, Period-6

2. La = Group-4, Period-7
   Ce = Group-5, Period-7

3. La = Group-3, Period-7
   Ce = Group-3, Period-6

4. La = Group-3, Period-6
   Ce = Group-3, Period-7

Question Type : **MCQ**
Question ID : **37135115736**
Option 1 ID : **37135162942**
Option 2 ID : **37135162943**
Option 3 ID : **37135162944**
Option 4 ID : **37135162941**
Status : **Answered**
Chosen Option : **2**

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Q.25

What is the formal charge on hydrogen atom in water molecule ?

Ans

1. 1

2. 0

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

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

Question Type : **MCQ**
Question ID : **37135115725**
Option 1 ID : **37135162900**
Option 2 ID : **37135162897**
Option 3 ID : **37135162899**
Option 4 ID : **37135162898**
Status : **Answered**
Chosen Option : **2**

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Q.26

Identify addition polymer from following

Ans

✗ 1. Nylon-6, 6

✗ 2. Polyester

✓ 3. Orlon

✗ 4. Urea formaldehyde polymer

Question Type : **MCQ**
Question ID : **37135115740**
Option 1 ID : **37135162958**
Option 2 ID : **37135162959**
Option 3 ID : **37135162957**
Option 4 ID : **37135162960**
Status : **Answered**
Chosen Option : **3**

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Q.27

Identify the correct statement from following

Ans

1.

Lanthanoids have greater tendency to form complexes than actinoids.

2.

Actinoid contraction is greater than lanthanoid contraction.

3.

Hydroxides of actinoids are less basic than Lathanoid hydroxides.

4.

Binding energy of 4 f - orbitals is lower that 5 f - orbitals.

Question Type : **MCQ**
Question ID : **37135115732**
Option 1 ID : **37135162926**
Option 2 ID : **37135162928**
Option 3 ID : **37135162927**
Option 4 ID : **37135162925**
Status : **Answered**
Chosen Option : **3**

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Q.28

Identify the ore of magnesium from following ?

Ans

✗ 1. Siderite

✗ 2. Calamine

✗ 3. Limonite

✓ 4. Dolomite

Question Type : **MCQ**
Question ID : **37135115707**
Option 1 ID : **37135162826**
Option 2 ID : **37135162825**
Option 3 ID : **37135162827**
Option 4 ID : **37135162828**
Status : **Answered**
Chosen Option : **4**

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Q.29

Which of the following is a solid trimer of formaldehyde ?

Ans

✗ 1. Metaldehyde

✗ 2. Paraformaldehyde

✗ 3. Paraldehyde

✓ 4. Trioxane

Question Type : **MCQ**
Question ID : **37135115744**
Option 1 ID : **37135162975**
Option 2 ID : **37135162973**
Option 3 ID : **37135162976**
Option 4 ID : **37135162974**
Status : **Answered**
Chosen Option : **2**

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Q.30

What is the number of carbon atoms in alkanes found in diesel ?

Ans

✗ 1. C_{29} to C_{31}

✗ 2. C_6 to C_8

✗ 3. C_1 to C_4

✓ 4. C_{15} to C_{18}

Question Type : **MCQ**
Question ID : **37135115706**
Option 1 ID : **37135162824**
Option 2 ID : **37135162822**
Option 3 ID : **37135162821**
Option 4 ID : **37135162823**
Status : **Answered**
Chosen Option : **4**

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Q.31

What is the formula of lithium imide ?

Ans

✗ 1. $LiNO_3$

✓ 2. Li_2NH

✗ 3. Li_3N

✗ 4. $LiNH_2$

Question Type : **MCQ**
Question ID : **37135115716**
Option 1 ID : **37135162864**
Option 2 ID : **37135162862**
Option 3 ID : **37135162863**
Option 4 ID : **37135162861**
Status : **Answered**
Chosen Option : **2**

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Q.32

How many hydroxy groups are present in hydroxyquinol ?

Ans

1. 4

2. 1

3. 3

4. 2

Question Type : **MCQ**
Question ID : **37135115737**
Option 1 ID : **37135162948**
Option 2 ID : **37135162945**
Option 3 ID : **37135162947**
Option 4 ID : **37135162946**
Status : **Answered**
Chosen Option : **2**

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Q.33

Which oxide formation according to Ellingham diagram shows a graph with sudden change in slope ?

Ans

✗ 1. CO_2

✗ 2. Ag_2O

✗ 3. Al_2O_3

✓ 4. MgO

Question Type : **MCQ**
Question ID : **37135115715**
Option 1 ID : **37135162860**
Option 2 ID : **37135162858**
Option 3 ID : **37135162857**
Option 4 ID : **37135162859**
Status : **Answered**
Chosen Option : **2**

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Q.34

What is the conductivity of 0·01 M NaCl solution if resistance and cell constant of NaCl solution are 375 ohms and 0·5 cm^{-1} respectively at 298 K ?

Ans

✗ 1. $7{\cdot}50 \times 10^{-3}\ \Omega^{-1}\ cm^{-1}$

✓ 2. $1{\cdot}333 \times 10^{-3}\ \Omega^{-1}\ cm^{-1}$

✗ 3. $1{\cdot}333 \times 10^{-4}\ \Omega^{-1}\ cm^{-1}$

✗ 4. $1{\cdot}875 \times 10^{-3}\ \Omega^{-1}\ cm^{-1}$

Question Type : **MCQ**
Question ID : **37135115743**
Option 1 ID : **37135162972**
Option 2 ID : **37135162971**
Option 3 ID : **37135162970**
Option 4 ID : **37135162969**
Status : **Answered**
Chosen Option : **2**

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Q.35

How many lone pair of electrons are present on chlorine atom in chlorus acid ?

Ans

1. 4

2. 2

3. 1

4. 3

Question Type : **MCQ**
Question ID : **37135115722**
Option 1 ID : **37135162885**
Option 2 ID : **37135162887**
Option 3 ID : **37135162888**
Option 4 ID : **37135162886**
Status : **Answered**
Chosen Option : **3**

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Q.36 What is the percentage of void space in bcc type of in unit cell ?

Ans

1. 68 %

2. 26 %

3. 74 %

4. 32 %

Question Type : **MCQ**
Question ID : **37135115712**
Option 1 ID : **37135162847**
Option 2 ID : **37135162846**
Option 3 ID : **37135162845**
Option 4 ID : **37135162848**
Status : **Answered**
Chosen Option : **1**

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Q.37

Which of the following compounds on heating with potassium permanagnate and dilute sulphuric acid forms adipic acid ?

Ans

1. Methylbenzene

2. Phenylethene

3. Cyclohexene

4. n-butylbenzene

Question Type : **MCQ**
Question ID : **37135115745**
Option 1 ID : **37135162980**
Option 2 ID : **37135162978**
Option 3 ID : **37135162977**
Option 4 ID : **37135162979**
Status : **Answered**
Chosen Option : **4**

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Q.38

The sum of oxidation number of all atoms in $S_2O_3^{2-}$ ion is

Ans

1. $+2$

2. $+5$

3. -2

4. $+7$

Question Type : **MCQ**
Question ID : **37135115741**
Option 1 ID : **37135162961**
Option 2 ID : **37135162963**
Option 3 ID : **37135162962**
Option 4 ID : **37135162964**
Status : **Answered**
Chosen Option : **1**

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Q.39

Which of the following oxyacid of sulphur contain both S=S and S=O bonds ?

Ans

✗ 1. $H_2S_2O_5$

✗ 2. $H_2S_2O_4$

✗ 3. $H_2S_2O_2$

✓ 4. $H_2S_2O_3$

Question Type : **MCQ**
Question ID : **37135115717**
Option 1 ID : **37135162866**
Option 2 ID : **37135162868**
Option 3 ID : **37135162867**
Option 4 ID : **37135162865**
Status : **Answered**
Chosen Option : **2**

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Q.40

When one mole of lactose is hydrolysed, the hydrolysate contains

Ans

1. 1·0 mol Galactose + 1·0 mol Glucose

2. 1·0 mol Glucose + 2·0 mol Galactose

3. 1·0 mol Glucose + 1·0 mol Fructose

4. 2·0 mol Glucose

Question Type : **MCQ**
Question ID : **37135115704**
Option 1 ID : **37135162816**
Option 2 ID : **37135162814**
Option 3 ID : **37135162815**
Option 4 ID : **37135162813**
Status : **Answered**
Chosen Option : **2**

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Q.41 What is the type of hole occupied if limiting value of $\frac{r+}{r-}$ is in the range of 0·225 to 0·414 ?

Ans

✗ 1. Octahedral

✗ 2. Cubic

✗ 3. Planar triangular

✓ 4. Tetrahedral

Question Type : **MCQ**
Question ID : **37135115720**
Option 1 ID : **37135162879**
Option 2 ID : **37135162880**
Option 3 ID : **37135162877**
Option 4 ID : **37135162878**
Status : **Answered**
Chosen Option : **4**

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Q.42

Which of the following compounds is obtained when quaternary ammonium hydroxide is strongly heated ?

Ans

1. Alkane

2. Alkyne

3. Alkene

4. Amide

Question Type : **MCQ**
Question ID : **37135115714**
Option 1 ID : **37135162853**
Option 2 ID : **37135162855**
Option 3 ID : **37135162854**
Option 4 ID : **37135162856**
Status : **Answered**
Chosen Option : **4**

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Q.43

Which of the following equations has $\Delta_f H°$ and $\Delta H°$ same ?

Ans

✔ 1. $H_{2(g)} + \frac{1}{2} O_{2(g)} \longrightarrow H_2O_{(l)}$

✘ 2. $N_{2(l)} + O_{3(g)} \longrightarrow N_2O_{3(g)}$

✘ 3.

$CH_{4(g)} + 2Cl_{2(g)} \longrightarrow CH_2Cl_{2(g)} + 2HCl_{(g)}$

✘ 4. $2CO_{(g)} + O_{2(g)} \longrightarrow 2\ CO_{2(g)}$

Question Type : **MCQ**
Question ID : **37135115739**
Option 1 ID : **37135162955**
Option 2 ID : **37135162953**
Option 3 ID : **37135162954**
Option 4 ID : **37135162956**
Status : **Answered**
Chosen Option : **3**

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Q.44 Separation of Acetone and Benzene from their mixture is carried out by

Ans

1. Fractional distillation

2. Simple distillation

3. Fractional distillation using fractionating column

4. Distillation under reduced pressure

Question Type : **MCQ**
Question ID : **37135115711**
Option 1 ID : **37135162842**
Option 2 ID : **37135162841**
Option 3 ID : **37135162843**
Option 4 ID : **37135162844**
Status : **Answered**
Chosen Option : **3**

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Q.45

Which gas among the following contains maximum number of molecules at STP ?
(Molar masses in g mol^{-1} $CO_2 = 44$, Ar = 39·9, $CH_4 = 16$, $O_2 = 32$)

Ans

1. 24·0 g of O_2

2. 16·0 g of CH_4

3. 13·3 g of Ar

4. 11 g of CO_2

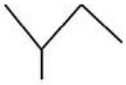
Question Type : **MCQ**
Question ID : **37135115747**
Option 1 ID : **37135162988**
Option 2 ID : **37135162987**
Option 3 ID : **37135162986**
Option 4 ID : **37135162985**
Status : **Answered**
Chosen Option : **2**

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Q.46

How many isomers of monobromoderivaties are obtained on bromination of following compound ?



Ans

✔ 1. 4

✘ 2. 3

✘ 3. 2

✘ 4. 5

Question Type : **MCQ**
Question ID : **37135115718**
Option 1 ID : **37135162871**
Option 2 ID : **37135162870**
Option 3 ID : **37135162869**
Option 4 ID : **37135162872**
Status : **Answered**
Chosen Option : **3**

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Q.47 If two moles of an ideal gas at 546 K occupy a volume of 44·8 L. What is the pressure of ideal gas at 546 K ? (R = 0·0821 L atm $mol^{-1}K^{-1}$)

Ans

✗ 1. 20 atm

✗ 2. 0·2 atm

✗ 3. 0·5 atm

✓ 4. 2·0 atm

Question Type : **MCQ**
Question ID : **37135115746**
Option 1 ID : **37135162984**
Option 2 ID : **37135162983**
Option 3 ID : **37135162981**
Option 4 ID : **37135162982**
Status : **Answered**
Chosen Option : **4**

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Q.48

When soap is added to an oily part of cloth, the hydrocarbon part of soap dissolves in

Ans

1. Water, keeping the tail away from the oil

2. Oil, keeping the head away from the oil

3. Water, keeping the head away from the oil

4. Oil, keeping the tail away from the oil

Question Type : **MCQ**
Question ID : **37135115705**
Option 1 ID : **37135162820**
Option 2 ID : **37135162817**
Option 3 ID : **37135162818**
Option 4 ID : **37135162819**
Status : **Answered**
Chosen Option : **2**

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Q.49

Identify basic amino acid from following

Ans

1. Phenylalanine

2. Histidine

3. Alanine

4. Serine

Question Type : **MCQ**
Question ID : **37135115721**
Option 1 ID : **37135162881**
Option 2 ID : **37135162884**
Option 3 ID : **37135162882**
Option 4 ID : **37135162883**
Status : **Answered**
Chosen Option : **1**

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Q.50

If 2·0 g of NaOH is dissolved in 500 cm^3 of water, what is molarity of solution ?

Ans

✗ 1. $0{\cdot}25\ mol\ dm^{-3}$

✓ 2. $0{\cdot}1\ mol\ dm^{-3}$

✗ 3. $0{\cdot}4\ mol\ dm^{-3}$

✗ 4. $0{\cdot}50\ mol\ dm^{-3}$

Question Type : **MCQ**
Question ID : **37135115723**
Option 1 ID : **37135162891**
Option 2 ID : **37135162890**
Option 3 ID : **37135162889**
Option 4 ID : **37135162892**
Status : **Answered**
Chosen Option : **2**

Section : **Mathematics**

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Q.1

$5^2 + 6^2 + 7^2 + \ldots\ldots\ldots\ldots + 20^2 =$

Ans

1. 2860

2. 2840

3. 2830

4. 2850

Question Type : **MCQ**
Question ID : **37135115780**
Option 1 ID : **37135163120**
Option 2 ID : **37135163118**
Option 3 ID : **37135163117**
Option 4 ID : **37135163119**
Status : **Answered**
Chosen Option : **2**

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Q.2 The p.d.f. of a random variable X is given by $f(x) = \frac{k}{\sqrt{x}}$ if $0 \le x \le 4$

$= 0$ otherwise,

then P $(1 < X < 4)$ =

Ans

1. ✔ $\frac{1}{2}$

2. ✘ $\frac{1}{3}$

3. ✘ $\frac{1}{5}$

4. ✘ $\frac{3}{4}$

Question Type : **MCQ**
Question ID : **37135115776**
Option 1 ID : **37135163103**
Option 2 ID : **37135163101**
Option 3 ID : **37135163102**
Option 4 ID : **37135163104**
Status : **Answered**
Chosen Option : **4**

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Q.3 The acute angle between the line $\vec{r} = (\hat{i} + 2\hat{j} + \hat{k}) + \lambda(\hat{i} + \hat{j} + \hat{k})$ and the plane $\vec{r}.(2\hat{i} - \hat{j} + \hat{k}) = 5$ is

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135115788**
Option 1 ID : **37135163149**
Option 2 ID : **37135163150**
Option 3 ID : **37135163151**
Option 4 ID : **37135163152**
Status : **Answered**
Chosen Option : **1**

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Q.4 With usual notations in ΔABC, $a = 3$, $c = 2$ and $\sin C = \frac{2}{3}$, then $\angle A =$

Ans

1. $\frac{\pi^c}{4}$

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

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

4. $\frac{\pi^c}{6}$

Question Type : **MCQ**
Question ID : **37135115763**
Option 1 ID : **37135163050**
Option 2 ID : **37135163049**
Option 3 ID : **37135163052**
Option 4 ID : **37135163051**
Status : **Answered**
Chosen Option : **3**

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Q.5 The rate of growth of bacteria is proportional to the bacteria present. If it is found that the number doubles in 3 hours, then the number of times the bacteria are increased in 6 hours is

Ans

1. 6 times the original

2. 4 times the original

3. 8 times the original

4. 5 times the original

Question Type : **MCQ**
Question ID : **37135115799**
Option 1 ID : **37135163194**
Option 2 ID : **37135163195**
Option 3 ID : **37135163193**
Option 4 ID : **37135163196**
Status : **Answered**
Chosen Option : **2**

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Q.6 An urn contains 4 red and 5 white balls. Two balls are drawn one after the other without replacement, then the probability that both the balls are red is

Ans

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

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

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

4. $\frac{4}{9}$

Question Type : **MCQ**
Question ID : **37135115794**
Option 1 ID : **37135163176**
Option 2 ID : **37135163175**
Option 3 ID : **37135163173**
Option 4 ID : **37135163174**
Status : **Answered**
Chosen Option : **2**

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Q.7 The joint equation of two lines through the origin, each of which making an angle of $30°$ with line $x + y = 0$ is

Ans

1. $x^2 + 4xy - y^2 = 0$

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

3. $x^2 + 4xy + y^2 = 0$

4. $x^2 - 4xy - y^2 = 0$

Question Type : **MCQ**
Question ID : **37135115758**
Option 1 ID : **37135163031**
Option 2 ID : **37135163029**
Option 3 ID : **37135163030**
Option 4 ID : **37135163032**
Status : **Answered**
Chosen Option : **2**

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Q.8

If $\sin\left(\frac{x+y}{x-y}\right) = \tan\frac{\pi}{5}$, then $\frac{dy}{dx} =$

Ans

1. $\frac{x}{y}$

2. $\frac{y}{x}$

3. $-\frac{y}{x}$

4. $-\frac{x}{y}$

Question Type : **MCQ**
Question ID : **37135115800**
Option 1 ID : **37135163198**
Option 2 ID : **37135163197**
Option 3 ID : **37135163199**
Option 4 ID : **37135163200**
Status : **Answered**
Chosen Option : **2**

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Q.9

The probability mass function of a random variable X is

$$P(X = x) = \frac{{}^{5}Cx}{2^5} \quad \text{if} \quad x = 0, 1, 2, 3, 4, 5$$

$$= 0 \qquad \text{otherwise}$$

then, $P(X \leq 2) =$

Ans

1. $P(X > 3)$

2. $P(X \geq 3)$

3. $P(X \geq 2)$

4. $P(X > 4)$

Question Type : **MCQ**
Question ID : **37135115768**
Option 1 ID : **37135163069**
Option 2 ID : **37135163070**
Option 3 ID : **37135163071**
Option 4 ID : **37135163072**
Status : **Answered**
Chosen Option : **1**

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Q.10

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

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 : **37135115767**
Option 1 ID : **37135163068**
Option 2 ID : **37135163067**
Option 3 ID : **37135163066**
Option 4 ID : **37135163065**
Status : **Answered**
Chosen Option : **3**

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Q.11

If A, B, C are the angles of a ΔABC, then with usual notations, $\frac{c^2-a^2+b^2}{a^2-b^2+c^2} =$

Ans

✗ 1. $\frac{cosB}{cosA}$

✗ 2. $\frac{cotB}{cotA}$

✗ 3. $\frac{sinB}{sinA}$

✓ 4. $\frac{tanB}{tanA}$

Question Type : **MCQ**
Question ID : **37135115759**
Option 1 ID : **37135163033**
Option 2 ID : **37135163035**
Option 3 ID : **37135163034**
Option 4 ID : **37135163036**
Status : **Answered**
Chosen Option : **2**

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Q.12

Domain of the real valued function $f(x) = \frac{x+2}{9-x^2}$ is

Ans

1. $-3 \leq x \leq 3$

2. $R-\{-3, 3\}$

3. R

4. $R-\{3\}$

Question Type : **MCQ**
Question ID : **37135115760**
Option 1 ID : **37135163040**
Option 2 ID : **37135163039**
Option 3 ID : **37135163037**
Option 4 ID : **37135163038**
Status : **Answered**
Chosen Option : **2**

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Q.13

The differential equation whose solution is $y = e^{ax}$ is

Ans

✗ 1. $y\frac{dy}{dx} = xlogy$

✗ 2. $\frac{dy}{dx} = xlogx$

✗ 3. $\frac{dy}{dx} = ylogx$

✓ 4. $x\frac{dy}{dx} = ylogy$

Question Type : **MCQ**
Question ID : **37135115761**
Option 1 ID : **37135163044**
Option 2 ID : **37135163042**
Option 3 ID : **37135163041**
Option 4 ID : **37135163043**
Status : **Answered**
Chosen Option : **4**

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Q.14 A body cools according to Newton's law from 100°C to 60°C in 20 minutes. The temperature of the surrounding being 20°C then the temperature of the body after one hour is

Ans

1. 15°C

2. 30°C

3. 40°C

4. 20°C

Question Type : **MCQ**
Question ID : **37135115792**
Option 1 ID : **37135163167**
Option 2 ID : **37135163168**
Option 3 ID : **37135163166**
Option 4 ID : **37135163165**
Status : **Answered**
Chosen Option : **4**

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Q.15 If A $(3, -2, 2)$, B $(2, \lambda+1, 5)$ are the end points of the diameter of the circle and if the point $(5, 6, -1)$ lies on the circle, then $\lambda =$

Ans

1. 6

2. 8

3. 7

4. 5

Question Type : **MCQ**
Question ID : **37135115752**
Option 1 ID : **37135163006**
Option 2 ID : **37135163008**
Option 3 ID : **37135163007**
Option 4 ID : **37135163005**
Status : **Answered**
Chosen Option : **4**

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Q.16 If the L. M. V. T. holds for the function $f(x) = x + \frac{1}{x}$, $x \in [1, 3]$, then c =

Ans

1. $\sqrt{3}$

2. 3

3. 2

4. $-\sqrt{3}$

Question Type : **MCQ**
Question ID : **37135115785**
Option 1 ID : **37135163140**
Option 2 ID : **37135163138**
Option 3 ID : **37135163137**
Option 4 ID : **37135163139**
Status : **Answered**
Chosen Option : **1**

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Q.17 If $\overline{a}, \overline{b}, \overline{c}, \overline{d}$ are the position vectors of the points A, B, C, D respectively such that $3\overline{a} - \overline{b} + 2\overline{c} - 4\overline{d} = \overline{0}$, then the position vector of the point of intersection of the line segments AC and BD is

Ans

✗ 1. $\frac{\overline{b} + 3\overline{d}}{4}$

✗ 2. $\frac{3\overline{a} + \overline{c}}{4}$

✗ 3. $\frac{\overline{a} + \overline{c}}{2}$

✓ 4. $\frac{\overline{b} + 4\overline{d}}{5}$

Question Type : **MCQ**
Question ID : **37135115784**
Option 1 ID : **37135163135**
Option 2 ID : **37135163134**
Option 3 ID : **37135163136**
Option 4 ID : **37135163133**
Status : **Answered**
Chosen Option : **1**

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Q.18 The perimeter of a triangle is 10 cm. If one of its side is 4 cm , then remaining sides of the triangle , when area of triangle is maximum are

Ans

✗ 1. 5 cm , 1 cm

✗ 2. 3·6 cm , 2·4 cm

✓ 3. 3 cm , 3 cm

✗ 4. 2 cm , 4 cm

Question Type : **MCQ**
Question ID : **37135115783**
Option 1 ID : **37135163132**
Option 2 ID : **37135163130**
Option 3 ID : **37135163129**
Option 4 ID : **37135163131**
Status : **Answered**
Chosen Option : **3**

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Q.19 If $\overline{u} = \hat{i} - 2\hat{j} + \hat{k}$, $\overline{v} = 3\hat{i} + \hat{k}$ and $\overline{w} = \hat{j} - \hat{k}$, then the volume of the parallelopiped with $\overline{u} \times \overline{v}$, $\overline{u} + \overline{w}$ and $\overline{v} + \overline{w}$ as coterminus edges is

Ans

✗ 1. 12 cubic units

✗ 2. 10 cubic units

✓ 3. 24 cubic units

✗ 4. 20 cubic units

Question Type : **MCQ**
Question ID : **37135115756**
Option 1 ID : **37135163023**
Option 2 ID : **37135163021**
Option 3 ID : **37135163022**
Option 4 ID : **37135163024**
Status : **Answered**
Chosen Option : **1**

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Q.20

If $A = \begin{bmatrix} cos\theta & -sin\theta \\ -sin\theta & -cos\theta \end{bmatrix}$, then $A^{-1} =$

Ans

1. $\begin{bmatrix} -sin\theta & -cos\theta \\ -cos\theta & sin\theta \end{bmatrix}$

2. $\begin{bmatrix} sin\theta & -cos\theta \\ cos\theta & -sin\theta \end{bmatrix}$

3. $\begin{bmatrix} -cos\theta & sin\theta \\ sin\theta & cos\theta \end{bmatrix}$

4. $\begin{bmatrix} cos\theta & -sin\theta \\ -sin\theta & -cos\theta \end{bmatrix}$

Question Type : **MCQ**
Question ID : **37135115779**
Option 1 ID : **37135163116**
Option 2 ID : **37135163115**
Option 3 ID : **37135163114**
Option 4 ID : **37135163113**
Status : **Answered**
Chosen Option : **3**

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Q.21

$$\int_{2}^{3} \frac{dx}{x^2 + x} =$$

Ans

1. $log\left(\frac{3}{4}\right)$

2. $log\left(\frac{3}{2}\right)$

3. $log\left(\frac{9}{8}\right)$

4. $log\left(\frac{8}{9}\right)$

Question Type : **MCQ**
Question ID : **37135115771**
Option 1 ID : **37135163082**
Option 2 ID : **37135163081**
Option 3 ID : **37135163084**
Option 4 ID : **37135163083**
Status : **Answered**
Chosen Option : **2**

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Q.22

If $\sqrt{x}+\sqrt{y}=\sqrt{xy}$, then $\frac{dy}{dx}=$

Ans

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

✘ 2. $\left(\frac{x}{y}\right)^{\frac{3}{2}}$

✘ 3. $-\left(\frac{x}{y}\right)^{\frac{3}{2}}$

✘ 4. $\left(\frac{y}{x}\right)^{\frac{3}{2}}$

Question Type : **MCQ**
Question ID : **37135115793**
Option 1 ID : **37135163169**
Option 2 ID : **37135163171**
Option 3 ID : **37135163172**
Option 4 ID : **37135163170**
Status : **Answered**
Chosen Option : **4**

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Q.23

$$\int_0^a (a-x)^{\frac{3}{2}} \cdot x^2 \, dx =$$

Ans

1. $\frac{-16\, a^{\frac{9}{2}}}{315}$

2. $\frac{16\, a^{\frac{9}{2}}}{315}$

3. $\frac{16\, a^{\frac{7}{2}}}{315}$

4. $\frac{-16\, a^{\frac{7}{2}}}{315}$

Question Type : **MCQ**
Question ID : **37135115765**
Option 1 ID : **37135163057**
Option 2 ID : **37135163058**
Option 3 ID : **37135163060**
Option 4 ID : **37135163059**
Status : **Answered**
Chosen Option : **2**

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Q.24 If the lines $\frac{1-x}{2}=\frac{y-8}{\lambda}=\frac{z-5}{2}$ and $\frac{x-11}{5}=\frac{y-3}{3}=\frac{z-1}{1}$ are perpendicular, then $\lambda=$

Ans

1. 4

2. -4

3. $\frac{8}{3}$

4. $\frac{-8}{3}$

Question Type : **MCQ**
Question ID : **37135115769**
Option 1 ID : **37135163073**
Option 2 ID : **37135163074**
Option 3 ID : **37135163075**
Option 4 ID : **37135163076**
Status : **Answered**
Chosen Option : **3**

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Q.25

$$sec2\theta - tan2\theta \ =$$

Ans

✔ 1. $tan\left(\frac{\pi}{4} - \theta\right)$

✘ 2. $tan2\theta$

✘ 3. $cot\ 2\theta$

✘ 4. $cot\left(\frac{\pi}{4} - \theta\right)$

Question Type : **MCQ**
Question ID : **37135115754**
Option 1 ID : **37135163015**
Option 2 ID : **37135163016**
Option 3 ID : **37135163013**
Option 4 ID : **37135163014**
Status : **Answered**
Chosen Option : **1**

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Q.26 The area bounded by the curve $y = x^3$, the X-axis and the lines $x = 1$ and $x = 4$ is

Ans

1. $\frac{127}{4}$ sq. units

2. 64 sq. units

3. 27 sq. units

4. $\frac{255}{4}$ sq. units

Question Type : **MCQ**
Question ID : **37135115751**
Option 1 ID : **37135163003**
Option 2 ID : **37135163001**
Option 3 ID : **37135163002**
Option 4 ID : **37135163004**
Status : **Answered**
Chosen Option : **4**

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Q.27 The displacement of a particle at time 't' is $s = t^3 - 4t^2 - 5t$, then the velocity of the particle at $t = 2$ sec. is

Ans

✗ 1. $\left(\frac{1}{9}\right)$ units/ sec.

✓ 2. -9 units/ sec.

✗ 3. 9 units/ sec.

✗ 4. $\left(\frac{-1}{9}\right)$ units/ sec.

Question Type : **MCQ**
Question ID : **37135115787**
Option 1 ID : **37135163147**
Option 2 ID : **37135163146**
Option 3 ID : **37135163145**
Option 4 ID : **37135163148**
Status : **Answered**
Chosen Option : **2**

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Q.28

If $tanA = \frac{5}{6}$, $tanB = \frac{1}{11}$, then $A + B =$

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135115786**
Option 1 ID : **37135163142**
Option 2 ID : **37135163144**
Option 3 ID : **37135163143**
Option 4 ID : **37135163141**
Status : **Answered**
Chosen Option : **4**

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Q.29 The eccentricity of the ellipse given by the equation $9x^2 + 16y^2 = 144$ is

Ans

1. $\frac{\sqrt{7}}{4}$

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

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

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

Question Type : **MCQ**
Question ID : **37135115777**
Option 1 ID : **37135163105**
Option 2 ID : **37135163108**
Option 3 ID : **37135163107**
Option 4 ID : **37135163106**
Status : **Answered**
Chosen Option : **1**

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Q.30

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

Ans

1. $tan^{-1}(\sqrt{x+1}) + c$

2. $2\,tan^{-1}(\sqrt{x+1}) + c$

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

4. $tan^{-1}(\sqrt{x+2}) + c$

Question Type : **MCQ**
Question ID : **37135115778**
Option 1 ID : **37135163109**
Option 2 ID : **37135163110**
Option 3 ID : **37135163112**
Option 4 ID : **37135163111**
Status : **Answered**
Chosen Option : **2**

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Q.31

If $f'(x) = k\,(cosx + sinx)$ and $f(0) = 9$, $f\left(\frac{\pi}{2}\right) = 15$, then $f(x) =$

Ans

1. $3(sinx - cosx) + 12$

2. $3(sinx - cosx) - 12$

3. $3(sinx + cosx) + 12$

4. $3(cosx + sinx) - 12$

Question Type : **MCQ**
Question ID : **37135115782**
Option 1 ID : **37135163128**
Option 2 ID : **37135163126**
Option 3 ID : **37135163125**
Option 4 ID : **37135163127**
Status : **Answered**
Chosen Option : **1**

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Q.32 A multiple choice examination has 5 questions. Each question has three alternative answers of which exactly one is correct. The probability that a student will get at least one correct answer is

Ans

✗ 1. $\frac{80}{243}$

✗ 2. $\frac{32}{243}$

✗ 3. $\frac{163}{243}$

✓ 4. $\frac{211}{243}$

Question Type : **MCQ**
Question ID : **37135115755**
Option 1 ID : **37135163019**
Option 2 ID : **37135163018**
Option 3 ID : **37135163020**
Option 4 ID : **37135163017**
Status : **Answered**
Chosen Option : **3**

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Q.33

If $y = \cot^{-1}\left(\sqrt{\frac{1-sinx}{1+sinx}}\right)$, then $\frac{dy}{dx} =$

Ans

✔ 1. $\frac{1}{2}$

✘ 2. -1

✘ 3. $\frac{1}{3}$

✘ 4. 1

Question Type : **MCQ**
Question ID : **37135115789**
Option 1 ID : **37135163153**
Option 2 ID : **37135163156**
Option 3 ID : **37135163154**
Option 4 ID : **37135163155**
Status : **Answered**
Chosen Option : **2**

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Q.34 If $2\sin^2 x + 7cosx = 5$, then permissible value of $cosx$ is

Ans

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

2. 0

3. 1

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

Question Type : **MCQ**
Question ID : **37135115797**
Option 1 ID : **37135163187**
Option 2 ID : **37135163186**
Option 3 ID : **37135163188**
Option 4 ID : **37135163185**
Status : **Answered**
Chosen Option : **1**

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Q.35 The locus of a point of intersection of two lines $x\sqrt{3} - y = k\sqrt{3}$ and $\sqrt{3}\,kx + ky = \sqrt{3}$, $k \in R$, describes

Ans

1. a parabola

2. a hyperbola

3. an ellipse

4. a pair of lines

Question Type : **MCQ**
Question ID : **37135115790**
Option 1 ID : **37135163158**
Option 2 ID : **37135163159**
Option 3 ID : **37135163160**
Option 4 ID : **37135163157**
Status : **Answered**
Chosen Option : **3**

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Q.36 If $f(x)=\frac{(e^{2x}-1)sinx^0}{x^2}$, $x\neq 0$ is continuous at $x=0$, then $f(0)=$

Ans

1. $\frac{90}{\pi}$

2. $\frac{180}{\pi}$

3. $\frac{\pi}{90}$

4. $\frac{\pi}{180}$

Question Type : **MCQ**
Question ID : **37135115798**
Option 1 ID : **37135163192**
Option 2 ID : **37135163191**
Option 3 ID : **37135163190**
Option 4 ID : **37135163189**
Status : **Answered**
Chosen Option : **3**

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Q.37

The negation of the statement, $\exists\, x \in A$ such that $x + 5 > 8$ is

Ans

1. $\forall\, x \in A\ ,\quad x + 5 \geq 8$

2. $\forall\, x \in A\ ,\quad x + 5 \leq 8$

3. $\forall\, x \in A\ ,\quad x + 5 > 8$

4. $\exists\, x \in A$ such that $x + 5 < 8$

Question Type : **MCQ**
Question ID : **37135115791**
Option 1 ID : **37135163161**
Option 2 ID : **37135163164**
Option 3 ID : **37135163162**
Option 4 ID : **37135163163**
Status : **Answered**
Chosen Option : **2**

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Q.38 The differential equation obtained by eliminating the arbitrary constants from the equation $y^2 = (2x + c)^5$ is

Ans

✗ 1. $\left(\frac{dy}{dx}\right)^4 - 625y^4 = 0$

✓ 2. $\left(\frac{dy}{dx}\right)^5 - 3125y^3 = 0$

✗ 3. $\left(\frac{dy}{dx}\right)^3 - 125y^3 = 0$

✗ 4. $xy\frac{dy}{dx} = 5$

Question Type : **MCQ**
Question ID : **37135115781**
Option 1 ID : **37135163121**
Option 2 ID : **37135163122**
Option 3 ID : **37135163123**
Option 4 ID : **37135163124**
Status : **Answered**
Chosen Option : **2**

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Q.39 The feasible region of L. P. P.

Maximize $z = 70x + 50y$ subject to $8x + 5y \leq 60$, $4x + 5y \leq 40$ and $x \geq 0$, $y \geq 0$

is

Ans

✗ 1. a triangle

✗ 2. a square

✗ 3. a pentagon

✓ 4. a quadrilateral

Question Type : **MCQ**
Question ID : **37135115753**
Option 1 ID : **37135163009**
Option 2 ID : **37135163012**
Option 3 ID : **37135163011**
Option 4 ID : **37135163010**
Status : **Answered**
Chosen Option : **4**

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Q.40

$$\int \frac{5^x}{\sqrt{5^{(-2x)} - 5^{(2x)}}}\, dx =$$

Ans

✗ 1. $sin^{-1}(5^{2x}) + c$

✓ 2. $\frac{\sin^{-1}(5^{2x})}{log25} + c$

✗ 3. $tan^{-1}(5^x) + c$

✗ 4. $tan^{-1}(5^{2x}).log25 + c$

Question Type :	**MCQ**
Question ID :	**37135115774**
Option 1 ID :	**37135163096**
Option 2 ID :	**37135163094**
Option 3 ID :	**37135163093**
Option 4 ID :	**37135163095**
Status :	**Answered**
Chosen Option :	**1**

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Q.41 The length of the perpendicular to the plane $\vec{r}.(\hat{i}-2\hat{j}+3\hat{k})=14$ from the origin is

Ans

1. $\sqrt{7}$ units

2. 7 units

3. 14 units

4. $\sqrt{14}$ units

Question Type : **MCQ**
Question ID : **37135115762**
Option 1 ID : **37135163048**
Option 2 ID : **37135163047**
Option 3 ID : **37135163045**
Option 4 ID : **37135163046**
Status : **Answered**
Chosen Option : **4**

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Q.42 The differential equation of the family of lines having x- intercept 'a' and y- intercept 'b' is

Ans

1. $\frac{d^2y}{dx^2} = -1$

2. $\frac{d^2y}{dx^2} = 10$

3. $\frac{d^2y}{dx^2} = 1$

4. $\frac{d^2y}{dx^2} = 0$

Question Type : **MCQ**
Question ID : **37135115757**
Option 1 ID : **37135163026**
Option 2 ID : **37135163028**
Option 3 ID : **37135163025**
Option 4 ID : **37135163027**
Status : **Answered**
Chosen Option : **4**

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Q.43

Which of the following statement pattern is a contradiction ?

$S_1 \equiv (p \rightarrow q) \wedge (p \wedge \sim q)$

$S_2 \equiv [p \wedge (p \rightarrow q)] \rightarrow q$

$S_3 \equiv (p \vee q) \rightarrow \sim p$

$S_4 \equiv [p \wedge (p \rightarrow q)] \leftrightarrow q$

Ans

1. S_4
2. S_1
3. S_2
4. S_3

Question Type : **MCQ**
Question ID : **37135115796**
Option 1 ID : **37135163184**
Option 2 ID : **37135163181**
Option 3 ID : **37135163182**
Option 4 ID : **37135163183**
Status : **Answered**
Chosen Option : **3**

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Q.44

The vector equation of the line $\frac{x+3}{2} = \frac{2y-3}{5}$; $z = -1$ is

Ans

1. $\bar{r} = (3\hat{i} - \frac{3}{2}\hat{j} - \hat{k}) + \lambda(4\hat{i} + 5\hat{j})$

2. $\bar{r} = (-3\hat{i} + \frac{3}{2}\hat{j} - \hat{k}) + \lambda(4\hat{i} + 5\hat{j})$

3. $\bar{r} = (-3\hat{i} + \frac{3}{2}\hat{j} + \hat{k}) + \lambda(4\hat{i} + 5\hat{j})$

4. $\bar{r} = (3\hat{i} + \frac{3}{2}\hat{j} - \hat{k}) + \lambda(4\hat{i} + \frac{5}{2}\hat{j})$

Question Type : **MCQ**
Question ID : **37135115772**
Option 1 ID : **37135163087**
Option 2 ID : **37135163085**
Option 3 ID : **37135163086**
Option 4 ID : **37135163088**
Status : **Answered**
Chosen Option : **2**

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Q.45

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

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135115773**
Option 1 ID : **37135163089**
Option 2 ID : **37135163092**
Option 3 ID : **37135163090**
Option 4 ID : **37135163091**
Status : **Answered**
Chosen Option : **3**

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Q.46 If the acute angle between the lines $x^2 - 4xy + y^2 = 0$ is $\tan^{-1}(k)$, then k =

Ans

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

2. $\sqrt{3}$

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

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

Question Type : **MCQ**
Question ID : **37135115766**
Option 1 ID : **37135163061**
Option 2 ID : **37135163062**
Option 3 ID : **37135163063**
Option 4 ID : **37135163064**
Status : **Answered**
Chosen Option : **2**

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Q.47 If P (3, 2, 6), Q (1, 4, 5) and R (3, 5, 3) are the vertices of ΔPQR, then $m \angle PQR$ is

Ans

1. $90°$

2. $50°$

3. $70°$

4. $30°$

Question Type : **MCQ**
Question ID : **37135115795**
Option 1 ID : **37135163177**
Option 2 ID : **37135163180**
Option 3 ID : **37135163179**
Option 4 ID : **37135163178**
Status : **Answered**
Chosen Option : **1**

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Q.48 The line cuts X and Y axes at the points A and B respectively. The point $(5, 6)$ divides the line segment AB internally in the ratio 3:1, then equation of line is

Ans

✗ 1. $2x + y = 16$

✓ 2. $2x + 5y = 40$

✗ 3. $2x - y = 4$

✗ 4. $2x - 5y = -20$

Question Type :	**MCQ**
Question ID :	**37135115770**
Option 1 ID :	**37135163079**
Option 2 ID :	**37135163078**
Option 3 ID :	**37135163080**
Option 4 ID :	**37135163077**
Status :	**Answered**
Chosen Option :	**3**

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Q.49

If $f(x) = \frac{4x+7}{7x-4}$, then the value of $f\{f[f(2)]\} =$

Ans

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

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

3. $\frac{35}{39}$

4. $\frac{39}{35}$

Question Type : **MCQ**
Question ID : **37135115764**
Option 1 ID : **37135163054**
Option 2 ID : **37135163053**
Option 3 ID : **37135163056**
Option 4 ID : **37135163055**
Status : **Answered**
Chosen Option : **1**

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Q.50 If $3cosx \neq 2sinx$, then the general solution of $sin^2x - cos2x = 2 - sin2x$ is

Ans

1. $x = n\pi + \frac{\pi}{2}, \quad n \in Z$

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

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

4. $x = (2n+1)\pi, \quad n \in Z$

Question Type : **MCQ**
Question ID : **37135115775**
Option 1 ID : **37135163098**
Option 2 ID : **37135163100**
Option 3 ID : **37135163099**
Option 4 ID : **37135163097**
Status : **Answered**
Chosen Option : **1**

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