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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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Q.1

The potential differences that must be applied across the parallel and series combination of 3 identical capacitors is such that the energy stored in them becomes the same. The ratio of potential difference in parallel to series combination is

Ans

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

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

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

4. $\frac{1}{8}$

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Question Type : MCQ
Question ID : 37135115525
Option 1 ID : 37135162098
Option 2 ID : 37135162099
Option 3 ID : 37135162097
Option 4 ID : 37135162100
Status : Answered
Chosen Option : 3

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Q.2 The unit vector $(a\hat{i} + b\hat{j})$ is perpendicular to $(\hat{i} + \hat{j})$. The value of 'b' is

Ans

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

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

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

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

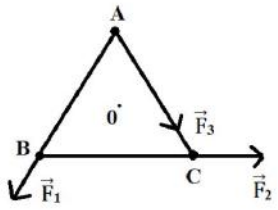
22

Question Type :	MCQ
Question ID :	37135115532
Option 1 ID :	37135162126
Option 2 ID :	37135162125
Option 3 ID :	37135162128
Option 4 ID :	37135162127
Status :	Answered
Chosen Option :	4

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Q.3 Figure shows three forces $\vec{F}_1$, $\vec{F}_2$ and $\vec{F}_3$ acting along the sides of an equilateral triangle. If the total torque acting at point 'O' (centre of the triangle) is zero then the magnitude of $\vec{F}_3$ is



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Ans

1. $\frac{F_1 - F_2}{2}$

2. $F_1 - F_2$

3. $F_1 + F_2$

4. $\frac{F_1}{F_2}$

Question Type : MCQ
Question ID : 37135115520
Option 1 ID : 37135162079
Option 2 ID : 37135162078
Option 3 ID : 37135162077
Option 4 ID : 37135162080
Status : Not Answered
Chosen Option : –

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Q.4 A pipe open at one end has length 0·8 m. At the open end of the tube a string 0·5m long is vibrating in its 1st overtone and resonates with fundamental frequency of pipe. If tension in the string is 50N, the mass of string is (speed of sound = 320 m/s)

Ans

1. 25 gram

2. 15 gram

3. 20 gram

4. 10 gram

Question Type : **MCQ**
Question ID : **37135115545**
Option 1 ID : **37135162180**
Option 2 ID : **37135162178**
Option 3 ID : **37135162179**
Option 4 ID : **37135162177**
Status : **Answered**
Chosen Option : **4**

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Q.5 If the dimensions of a physical quantity are given by $[L^aM^bT^c]$ then the physical quantity is

Ans

1. velocity if $a = -1, b = 0, c = +1$.

2. force if $a = -1, b = 1, c = -2$.

3. pressure if $a = -1, b = 1, c = -2$.

4. acceleration if $a = 1, b = 1, c = -2$.

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Question Type :	MCQ
Question ID :	37135115502
Option 1 ID :	37135162005
Option 2 ID :	37135162007
Option 3 ID :	37135162008
Option 4 ID :	37135162006
Status :	Answered
Chosen Option :	3

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Q.6

Two wires 'A' and 'B' of equal lengths are connected in left and right gaps, of meter bridge, respectively. The null point is obtained at 40 cm from left end. Diameters of the wires 'A' and 'B' are in the ratio 3 : 1, the ratio of specific resistance of 'A' to that of 'B' is

Ans

✗ 1. 3 : 1

✗ 2. 1 : 1

✓ 3. 6 : 1

✗ 4. 9 : 1

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Question Type : **MCQ**
Question ID : **37135115521**
Option 1 ID : **37135162082**
Option 2 ID : **37135162081**
Option 3 ID : **37135162083**
Option 4 ID : **37135162084**
Status : **Answered**
Chosen Option : **3**

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Q.7 A parallel combination of pure inductor and capacitor is connected across a source of alternating e.m.f. 'e'. The currents flowing through an inductor and capacitor are i_L and i_C respectively. In this parallel resonant circuit, the condition for currents i, i_L and i_C is (i=net r.m.s. current in the circuit)

Ans

✔ 1. $i \doteqdot 0, i_L = i_C \neq 0$

✘ 2. $i \neq 0, i_L = i_C = 0$

✘ 3. $i \doteqdot i_L = i_C$

✘ 4. $i \doteqdot 0, i_L \neq i_C$

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Question Type : **MCQ**
Question ID : **37135115501**
Option 1 ID : **37135162003**
Option 2 ID : **37135162001**
Option 3 ID : **37135162002**
Option 4 ID : **37135162004**
Status : **Answered**
Chosen Option : **2**

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Q.8

The frequency of two tuning forks A and B are 1·5% more and 2·5% less than that of the tuning fork C. When A and B are sounded together, 12 beats are produced in 1 second. The frequency of tuning fork C is

Ans

1. 200 Hz

2. 300 Hz

3. 240 Hz

4. 360 Hz

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Question Type : **MCQ**
Question ID : **37135115534**
Option 1 ID : **37135162133**
Option 2 ID : **37135162135**
Option 3 ID : **37135162134**
Option 4 ID : **37135162136**
Status : **Answered**
Chosen Option : **2**

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Q.9

A ball of mass 'm' is attached to the free end of an inextensible string of length 'ℓ'. Let 'T' be the tension in the string. The ball is moving in horizontal circular path about the vertical axis. The angular velocity of the ball at any particular instant will be

Ans

✔ 1. $\sqrt{\frac{T}{m\ell}}$

✘ 2. $\sqrt{\frac{T\ell}{m}}$

✘ 3. $\sqrt{\frac{m\ell}{T}}$

✘ 4. $\sqrt{\frac{Tm}{\ell}}$

Question Type : **MCQ**
Question ID : **37135115530**
Option 1 ID : **37135162120**
Option 2 ID : **37135162117**
Option 3 ID : **37135162119**
Option 4 ID : **37135162118**
Status : **Answered**
Chosen Option : **1**

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Q.10 The maximum velocity of the photoelectron emitted by the metal surface is 'v'. Charge and mass of the photoelectron is denoted by 'e' and 'm' respectively. The stopping potential in volt is

Ans

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

✗ 2. $\frac{v^2}{\left(\frac{e}{m}\right)}$

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✗ 3. $\frac{v^2}{2\left(\frac{m}{e}\right)}$

✓ 4. $\frac{v^2}{2\left(\frac{e}{m}\right)}$

Question Type : **MCQ**
Question ID : **37135115535**
Option 1 ID : **37135162140**
Option 2 ID : **37135162137**
Option 3 ID : **37135162139**
Option 4 ID : **37135162138**
Status : **Answered**
Chosen Option : **4**

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Q.11

A stationary body explodes into two parts of masses 'M_1' and 'M_2'. They move in opposite directions with velocities 'v_1' and 'v_2'. The ratio of their kinetic energies is

Ans

1. $\left[\frac{M_2}{M_1}\right]$

2. $\left[\frac{M_2}{M_1}\right]^{\frac{1}{2}}$

3. $\left[\frac{M_1}{M_2}\right]^{2}$

4. $\left[\frac{M_2}{M_1}\right]^{2}$

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Question Type : MCQ
Question ID : 37135115547
Option 1 ID : 37135162186
Option 2 ID : 37135162188
Option 3 ID : 37135162187
Option 4 ID : 37135162185
Status : Answered
Chosen Option : 1

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Q.12 In meter bridge experiment, to minimize an error due to contact resistance,

Ans

1. use non-uniform meter bridge wire.

2. repeat the experiment by interchanging the resistance in gaps.

3. increase the current flowing through meter bridge wire.

4. changing the value of known resistance in the gap.

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Question Type :	MCQ
Question ID :	37135115505
Option 1 ID :	37135162017
Option 2 ID :	37135162019
Option 3 ID :	37135162018
Option 4 ID :	37135162020
Status :	Answered
Chosen Option :	2

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Q.13 Magnetic field at the centre of a circular loop of area 'A' is 'B'. The magnetic moment of the loop will be (μ_0 = permeability of free space)

Ans

✗ 1. $\frac{BA^{\frac{3}{2}}}{\mu_0\pi}$

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✓ 2. $\frac{2BA^{\frac{3}{2}}}{\mu_0\pi^{\frac{1}{2}}}$

✗ 3. $\frac{2BA^{2}}{\mu_0\pi}$

✗ 4. $\frac{BA^{\frac{3}{2}}}{\mu_0\pi^{\frac{1}{2}}}$

Question Type : **MCQ**
Question ID : **37135115513**
Option 1 ID : **37135162050**
Option 2 ID : **37135162052**
Option 3 ID : **37135162049**
Option 4 ID : **37135162051**
Status : **Answered**
Chosen Option : **2**

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Q.14 Above the curie temperature the susceptibility of a ferromagnetic substance varies

Ans

1. directly as the absolute temperature.

2. inversely as the absolute temperature.

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3. inversely as the square root of absolute temperature.

4. directly as the square root of absolute temperature.

Question Type : **MCQ**
Question ID : **37135115531**
Option 1 ID : **37135162121**
Option 2 ID : **37135162122**
Option 3 ID : **37135162123**
Option 4 ID : **37135162124**
Status : **Answered**
Chosen Option : **2**

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Q.15 A solid cylinder of mass 'M' and radius 'R' rolls down a smooth inclined plane about its own axis and reaches the bottom with velocity 'v'. The height of the inclined plane is (g = acceleration due to gravity)

Ans

✔ 1. $\frac{3v^2}{4g}$.

✘ 2. $\frac{4v^2}{5g}$.

✘ 3. $\frac{7v^2}{9g}$.

✘ 4. $\frac{2v^2}{3g}$.

3

Question Type : **MCQ**
Question ID : **37135115544**
Option 1 ID : **37135162175**
Option 2 ID : **37135162174**
Option 3 ID : **37135162176**
Option 4 ID : **37135162173**
Status : **Answered**
Chosen Option : **1**

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Q.16

A body is projected vertically upwards from earth's surface with velocity $2v_e$, where v_e is escape velocity from earth's surface. The velocity when body escapes the gravitational pull is

Ans

1. $\sqrt{7}\ v_e$

2. $\sqrt{3}\ v_e$

3. $\sqrt{5}\ v_e$

4. $2\ v_e$

2

Question Type : MCQ
Question ID : 37135115526
Option 1 ID : 37135162104
Option 2 ID : 37135162103
Option 3 ID : 37135162102
Option 4 ID : 37135162101
Status : Answered
Chosen Option : 2

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Q.17 Two cars of masses 'm_1', and 'm_2' are moving in the circles of radii 'r_1' and 'r_2' respectively. Their angular speeds 'ω_1' and 'ω_2' are such that they both complete one revolution in the same time 't'. The ratio of linear speed of 'm_1' to the linear speed of 'm_2' is

Ans

✔ 1. $r_1 : r_2$

✘ 2. $T_1^2 : T_2^2$

✘ 3. $\omega_1^2 : \omega_2^2$

✘ 4. $m_1 : m_2$

Question Type : **MCQ**
Question ID : **37135115514**
Option 1 ID : **37135162054**
Option 2 ID : **37135162055**
Option 3 ID : **37135162056**
Option 4 ID : **37135162053**
Status : **Answered**
Chosen Option : **1**

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Q.18

Resultant of two vectors $\vec{P}$ and $\vec{Q}$ is of magnitude R_1. If direction of $\vec{Q}$ is reversed, the resultant is of magnitude R_2. The value of $(R_1^2 + R_2^2)$ is $[\cos(\pi - \theta) = -\cos\theta]$

Ans

1. $(P^2 + Q^2)$

2. $2(P^2 + Q^2)$

3. $2(P^2 - Q^2)$

4. $(P^2 - Q^2)$

Question Type :	MCQ
Question ID :	37135115522
Option 1 ID :	37135162088
Option 2 ID :	37135162087
Option 3 ID :	37135162085
Option 4 ID :	37135162086
Status :	Answered
Chosen Option :	2

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Q.19

Choose the correct statement. In conductors

Ans

✔ 1.

valence band and conduction band overlap each other.

✘ 2.

valence band and conduction band are separated by a large energy gap.

✘ 3.

very small number of electrons are available for electrical conduction.

✘ 4.

valence band and conduction band are separated by a small energy gap.

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Question Type : MCQ
Question ID : 37135115519
Option 1 ID : 37135162073
Option 2 ID : 37135162075
Option 3 ID : 37135162076
Option 4 ID : 37135162074
Status : Answered
Chosen Option : 1

Q.20

Two identical wires are vibrating in unison. If the tension in one of the wires is increased by 2%, five beats are produced per second by the two vibrating wires. The initial frequency of each wire is $(\sqrt{1 \cdot 02} \doteq 1 \cdot 01)$

Ans

✘ 1. 1000 Hz

✔ 2. 500 Hz

✘ 3. 400 Hz

✘ 4. 200 Hz

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Question Type : MCQ
Question ID : 37135115528
Option 1 ID : 37135162112
Option 2 ID : 37135162111
Option 3 ID : 37135162110
Option 4 ID : 37135162109
Status : Answered
Chosen Option : 2

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Q.21

Electron in Hydrogen atom first jumps from third excited state to second excited state and then from second excited state to first excited state. The ratio of the wavelengths $\lambda_1 : \lambda_2$ emitted in the two cases respectively is

Ans

1. $\frac{7}{5}$

2. $\frac{27}{20}$

3. $\frac{27}{5}$

4. $\frac{20}{7}$

Question Type :	MCQ
Question ID :	37135115529
Option 1 ID :	37135162113
Option 2 ID :	37135162114
Option 3 ID :	37135162115
Option 4 ID :	37135162116
Status :	Answered
Chosen Option :	4

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Q.22 In cyclotron, the time taken by an ion to describe semicircular path in a dee is

Ans

1. dependent on speed of ion.

2. independent of mass of ion.

3. independent of speed of ion and radius of circular path.

4. dependent on radius of circular path.

Question Type :	MCQ
Question ID :	37135115515
Option 1 ID :	37135162057
Option 2 ID :	37135162059
Option 3 ID :	37135162060
Option 4 ID :	37135162058
Status :	Answered
Chosen Option :	4

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Q.23 Two small drops of mercury each of radius 'R' coalesce to form a large single drop.

The ratio of the total surface energies before and after the change is

Ans

✗ 1. $\sqrt{2} : 1$

✓ 2. $2^{1/3} : 1$

✗ 3. $2 : 1$

✗ 4. $2^{2/3} : 1$

Question Type :	MCQ
Question ID :	37135115524
Option 1 ID :	37135162096
Option 2 ID :	37135162093
Option 3 ID :	37135162095
Option 4 ID :	37135162094
Status :	Answered
Chosen Option :	2

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Q.24 A ray of unpolarised light is incident on the glass surface of refractive index 1·73 at polarizing angle. The angle of refraction will be [Take tan 60° = 1·73]

Ans

1. 45°.

2. 15°.

3. 35°.

4. 30°.

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Question Type : MCQ
Question ID : 37135115543
Option 1 ID : 37135162172
Option 2 ID : 37135162169
Option 3 ID : 37135162171
Option 4 ID : 37135162170
Status : Answered
Chosen Option : 4

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Q.25

What is the magnifying power of a simple microscope of focal length 5cm, if the image is formed at the distance of distinct vision?

Ans

1. 4

2. 7

3. 6

4. 5

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Question Type : **MCQ**
Question ID : **37135115517**
Option 1 ID : **37135162065**
Option 2 ID : **37135162068**
Option 3 ID : **37135162067**
Option 4 ID : **37135162066**
Status : **Answered**
Chosen Option : **3**

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Q.26 Two rain drops falling through air have radii in the ratio 1 : 2. They will have terminal velocity in the ratio

Ans

1. 1 : 2

2. 4 : 1

3. 1 : 4

4. 2 : 1

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Question Type : **MCQ**
Question ID : **37135115537**
Option 1 ID : **37135162148**
Option 2 ID : **37135162145**
Option 3 ID : **37135162146**
Option 4 ID : **37135162147**
Status : **Answered**
Chosen Option : **3**

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Q.27 Two short bar magnets 'A and 'B' (having magnetic moments 'M_1' and 'M_2' respectively) are kept one above the other with their magnetic axis perpendicular to each other. If their resultant at a point on the axis of magnet 'A' is inclined at 45° with the axis of magnet A then the ratio of magnetic moments $\frac{M_2}{M_1}$ is [tan 45° =1]

Ans

1. ✔ 2 : 1

2. ✘ 2 : 3

3. ✘ 1 : 2

4. ✘ 3 : 2

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Question Type : **MCQ**
Question ID : **37135115507**
Option 1 ID : **37135162026**
Option 2 ID : **37135162027**
Option 3 ID : **37135162025**
Option 4 ID : **37135162028**
Status : **Answered**
Chosen Option : **1**

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Q.28 A heavy mass is attached at one end of a thin wire and whirled in a vertical circle.

The chances of breaking the wire are maximum when

Ans

✗ 1.

the wire is horizontal.

✓ 2.

the mass is at the lowest point of the circle.

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✗ 3.

the wire makes an angle of 60° with the horizontal.

✗ 4.

the mass is at the highest point of the circle.

Question Type :	**MCQ**
Question ID :	**37135115511**
Option 1 ID :	**37135162043**
Option 2 ID :	**37135162042**
Option 3 ID :	**37135162044**
Option 4 ID :	**37135162041**
Status :	**Answered**
Chosen Option :	**2**

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Q.29 A wheel is at rest in horizontal position. Its M.I. about vertical axis passing through its centre is 'I'. A constant torque 'τ'acts on it for 't' second. The change in rotational kinetic energy is

Ans

✔ 1. $\frac{\tau^2 t^2}{2I}$

3

✘ 2. $\left[\frac{\tau t}{2I}\right]$

✘ 3. $\left[\frac{\tau t}{2I}\right]^{\frac{1}{2}}$

✘ 4. $\left[\frac{\tau t}{2I}\right]^{2}$

Question Type : **MCQ**
Question ID : **37135115516**
Option 1 ID : **37135162064**
Option 2 ID : **37135162063**
Option 3 ID : **37135162062**
Option 4 ID : **37135162061**
Status : **Answered**
Chosen Option : **4**

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Q.30

A mass 'M' is suspended from a spring of negligible mass. The spring is pulled a little and then released so that the mass executes S.H.M. of period T. If the mass is increased by 'm', the time period becomes $\frac{'5T'}{3}$. What is the ratio $\left(\frac{M}{m}\right)$?

Ans

✗ 1. $\frac{25}{9}$

✗ 2. $\frac{16}{9}$

✗ 3. $\frac{9}{25}$

✓ 4. $\frac{9}{16}$

4

Question Type : **MCQ**
Question ID : **37135115548**
Option 1 ID : **37135162189**
Option 2 ID : **37135162191**
Option 3 ID : **37135162190**
Option 4 ID : **37135162192**
Status : **Answered**
Chosen Option : **4**

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Q.31 The earth's atmosphere is divided into different layers. Out of these layers, ionosphere consists of

Ans

✗ 1. only positive ions.

✗ 2. only neutral particles.

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✗ 3. only electrons.

✓ 4. electrons and positive ions.

Question Type :	**MCQ**
Question ID :	**37135115546**
Option 1 ID :	**37135162181**
Option 2 ID :	**37135162184**
Option 3 ID :	**37135162182**
Option 4 ID :	**37135162183**
Status :	**Answered**
Chosen Option :	**4**

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Q.32 A parallel beam of monochromatic light falls normally on a single narrow slit. The angular width of the central maximum in the resulting diffraction pattern

Ans

✔ 1. decreases with increase of slitwidth.

✘ 2. increases with increase of slitwidth.

✘ 3. decreases with decrease of slitwidth.

✘ 4. may increase or decrease.

Question Type :	MCQ
Question ID :	37135115508
Option 1 ID :	37135162029
Option 2 ID :	37135162030
Option 3 ID :	37135162031
Option 4 ID :	37135162032
Status :	Answered
Chosen Option :	1

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Q.33 A pendulum has length of 0.4 m and maximum speed 4 m/s. When the length makes an angle 30^0 with the horizontal, its speed will be

[$\sin\frac{\pi}{6} = \cos\frac{\pi}{3} = 0{\cdot}5$ and $g = 10 m/s^2$]

Ans

✗ 1. $2\sqrt{2}$ m/s

✗ 2. $\sqrt{3}$ m/s

✗ 3. $2\sqrt{5}$ m/s

✓ 4. $2\sqrt{3}$ m/s

Question Type : **MCQ**
Question ID : **37135115506**
Option 1 ID : **37135162022**
Option 2 ID : **37135162021**
Option 3 ID : **37135162024**
Option 4 ID : **37135162023**
Status : **Answered**
Chosen Option : **2**

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Q.34 On closing an open organ pipe from one end, it is noticed that the frequency of third harmonic is 50 Hz more than the fundamental frequency of vibration in open organ pipe. The fundamental frequency of open organ pipe is

Ans

1. 250 Hz

2. 100 Hz

3. 50 Hz

4. 200 Hz

Question Type : MCQ
Question ID : 37135115509
Option 1 ID : 37135162033
Option 2 ID : 37135162035
Option 3 ID : 37135162036
Option 4 ID : 37135162034
Status : Answered
Chosen Option : 2

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Q.35 If intensity of incident radiation in a photocell is increased, the stopping potential

Ans

1. first increases and then decreases.

2. remains unchanged.

3. decreases.

4. increases.

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Question Type : **MCQ**
Question ID : **37135115510**
Option 1 ID : **37135162040**
Option 2 ID : **37135162037**
Option 3 ID : **37135162039**
Option 4 ID : **37135162038**
Status : **Answered**
Chosen Option : **2**

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Q.36 In Young's double slit experiment, the intensity of light at a point on the screen is 'K' unit for path difference 'λ'. What would be the intensity at a point if path difference is $\frac{\lambda}{4}$?

Ans

✗ 1. zero

✗ 2. $\frac{K}{4}$

✗ 3. K

✓ 4. $\frac{K}{2}$

Question Type :	MCQ
Question ID :	37135115533
Option 1 ID :	37135162132
Option 2 ID :	37135162131
Option 3 ID :	37135162129
Option 4 ID :	37135162130
Status :	Answered
Chosen Option :	4

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Q.37

In a parallel plate capacitor, the capacity can be increased by decreasing

Ans

✗ 1.

permeability of the medium.

✗ 2.

value of dielectric constant.

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✗ 3. area of the plates.

✓ 4.

the distance between plates.

Question Type :	**MCQ**
Question ID :	**37135115550**
Option 1 ID :	**37135162200**
Option 2 ID :	**37135162197**
Option 3 ID :	**37135162198**
Option 4 ID :	**37135162199**
Status :	**Answered**
Chosen Option :	**4**

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Q.38 A constant force is applied to a metal wire of length 'L'. Volume of the wire is constant. The extension produced is proportional to

Ans

✔ 1. L^2

✗ 2. L^3

✗ 3. L

✗ 4. L^{-2}



Question Type :	MCQ
Question ID :	37135115539
Option 1 ID :	37135162155
Option 2 ID :	37135162154
Option 3 ID :	37135162153
Option 4 ID :	37135162156
Status :	Answered
Chosen Option :	1

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Q.39 The deflection in a moving coil galvanometer is reduced to half when it is shunted with 'X'Ω coil. The relation between 'X' and resistance of galvanometer 'G' is

Ans

1. $2X = G$

2. $4X = G$

3. $X = 2G$

4. $X = G$

14

Question Type : **MCQ**
Question ID : **37135115538**
Option 1 ID : **37135162149**
Option 2 ID : **37135162152**
Option 3 ID : **37135162150**
Option 4 ID : **37135162151**
Status : **Answered**
Chosen Option : **1**

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Q.40

A thin prism P_1 with angle 4° and made from glass of refractive index 1·54 is combined with another thin prism P_2 made from glass of refractive index 1·72 to produce dispersion without deviation. The angle of prism for P_2 is

Ans

1. 4°

2. 5·33°

3. 2·6°

4. 3°

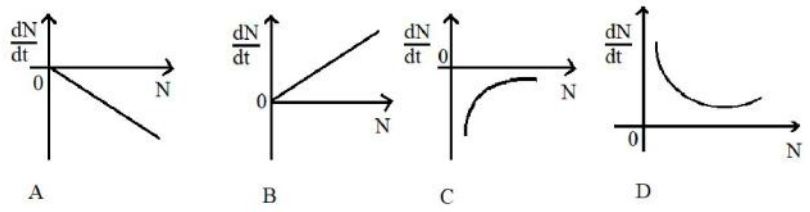
25

Question Type : MCQ
Question ID : 37135115527
Option 1 ID : 37135162106
Option 2 ID : 37135162105
Option 3 ID : 37135162108
Option 4 ID : 37135162107
Status : Answered
Chosen Option : 3

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Q.41 The variation of decay rate with number of active nuclei is correctly shown in graph



A B C D

Ans

1. D

2. C

3. A

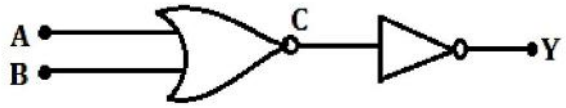
4. B

Question Type : MCQ
Question ID : 37135115503
Option 1 ID : 37135162012
Option 2 ID : 37135162011
Option 3 ID : 37135162009
Option 4 ID : 37135162010
Status : Answered
Chosen Option : 1

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Q.42 The resultant gate and its Boolean expression for the given circuit is



Ans ✔ 1.

OR, $A+B$

✗ 2. NOR, $\overline{A+B}$

✗ 3. NAND, $\overline{A \cdot B}$

✗ 4. AND, $A \cdot B$

19

Question Type : **MCQ**
Question ID : **37135115540**
Option 1 ID : **37135162157**
Option 2 ID : **37135162159**
Option 3 ID : **37135162160**
Option 4 ID : **37135162158**
Status : **Answered**
Chosen Option : **1**

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Q.43 Two spheres 'S_1' and 'S_2' have same radii but temperatures T_1 and T_2 respectively.

Their emissive power is same and emissivity is in the ratio 1 : 4. Then the ratio of T_1 to T_2 is

Ans

1. $\sqrt{2} : 1$

2. $1 : 2$

3. $2 : 1$

4. $1 : \sqrt{2}$



Question Type : MCQ
Question ID : 37135115518
Option 1 ID : 37135162071
Option 2 ID : 37135162069
Option 3 ID : 37135162072
Option 4 ID : 37135162070
Status : Answered
Chosen Option : 1

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Q.44 Two coaxial coils A and B of radii 'R_1' and 'R_2' are placed in the same plane. ($R_2 > R_1$). If a current is passed through coil B, the coefficient of mutual inductance between the coils is proportional to

Ans

✗ 1. $\frac{1}{R_1 R_2}$

✗ 2. $\frac{R_2^2}{R_1}$

✗ 3. $R_1 R_2$

✓ 4. $\frac{R_1^2}{R_2}$

16

Question Type : MCQ
Question ID : 37135115523
Option 1 ID : 37135162091
Option 2 ID : 37135162089
Option 3 ID : 37135162090
Option 4 ID : 37135162092
Status : Answered
Chosen Option : 3

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Q.45

Two satellites 'A' and 'B' are revolving with critical velocities 'v_A' and 'v_B' around the earth, in circular orbits of radii 'R' and '2R', respectively. The ratio $\frac{v_A}{v_B}$ is

Ans

1. $2:1$

2. $\sqrt{2}:1$

3. $1:2$

4. $1:\sqrt{2}$

Question Type : MCQ
Question ID : 37135115504
Option 1 ID : 37135162014
Option 2 ID : 37135162013
Option 3 ID : 37135162016
Option 4 ID : 37135162015
Status : Answered
Chosen Option : 2

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Q.46

Ordinary bodies 'A' and 'B' radiate maximum energy with wavelength difference 4μm. The absolute temperature of body 'A' is 3 times that of 'B'. The wavelength at which body 'B' radiates maximum energy is

Ans

1. 12 μm.

2. 6 μm.

3. 4 μm.

4. 8 μm.

9

Question Type : **MCQ**
Question ID : **37135115541**
Option 1 ID : **37135162164**
Option 2 ID : **37135162162**
Option 3 ID : **37135162161**
Option 4 ID : **37135162163**
Status : **Answered**
Chosen Option : **2**

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Q.47 A metal ball of mass 2kg moving with a speed of $10ms^{-1}$ had a head-on collision with a stationary ball of mass 3kg. If after collision, both the balls move together, then the loss in kinetic energy due to collision is

Ans

✔ 1. 60 J.

✘ 2. 100 J.

✘ 3. 140 J.

✘ 4. 40 J.

23

Question Type : **MCQ**
Question ID : **37135115542**
Option 1 ID : **37135162166**
Option 2 ID : **37135162167**
Option 3 ID : **37135162168**
Option 4 ID : **37135162165**
Status : **Not Answered**
Chosen Option : **--**

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Q.48 A charge '$q_\circ$' moving with velocity '$\vec{v}$' in a magnetic field of induction '$\vec{B}$', experiences force '$\vec{F}$'. The angle between $\vec{v}$ and $\vec{B}$ is θ.

The speed of '$q_\circ$' after one second will be

Ans

1. v/B

2. v

3. $v \times B$

4. B/v

27

Question Type : MCQ
Question ID : 37135115512
Option 1 ID : 37135162047
Option 2 ID : 37135162046
Option 3 ID : 37135162045
Option 4 ID : 37135162048
Status : Answered
Chosen Option : 2

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Q.49 A wire of length 10 cm is gently placed horizontally on the surface of water having surface tension of 75 $\times 10^3$ N/m. What force is required to just pull up the wire from the water surface?

Ans

1. 15×10^{-2} N

2. $7 \cdot 5 \times 10^{-2}$ N

3. $1 \cdot 5 \times 10^{-2}$ N

4. 75×10^{-2} N

6

Question Type : **MCQ**
Question ID : **37135115549**
Option 1 ID : **37135162196**
Option 2 ID : **37135162193**
Option 3 ID : **37135162195**
Option 4 ID : **37135162194**
Status : **Answered**
Chosen Option : **3**

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Q.50

The weight suspended from a spring oscillates up and down. The acceleration of weight will be zero at

Ans

1. mean position.

2. highest position.

3. half of the amplitude.

4. lowest position.

Question Type : **MCQ**
Question ID : **37135115536**
Option 1 ID : **37135162144**
Option 2 ID : **37135162142**
Option 3 ID : **37135162143**
Option 4 ID : **37135162141**
Status : **Answered**
Chosen Option : **1**

Section : **Chemistry**

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Q.1

Which of the following is a character of catalyst?

Ans

1. It changes the position of equilibrium.

2. It increases the rates of both forward and Backward reactions equally in reversible reaction.

3. It affects the energies of reactants and products of the reaction.

4. It increases the activation energy of reactants.

Question Type :	MCQ
Question ID :	37135115570
Option 1 ID :	37135162279
Option 2 ID :	37135162278
Option 3 ID :	37135162277
Option 4 ID :	37135162280
Status :	Answered
Chosen Option :	2

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Q.2 Identify the decreasing order of boiling point of alkanes (i) n-pentane (ii) Isopentane (iii) Neopentane

Ans

✗ 1.

Isopentane > n-pentane > Neopentane

✗ 2.

Neopentane > Isopentane > n-pentane

✓ 3.

n-pentane > Isopentane > Neopentane

✗ 4.

Isopentane > Neopentane > n-pentane

Question Type : **MCQ**
Question ID : **37135115600**
Option 1 ID : **37135162400**
Option 2 ID : **37135162399**
Option 3 ID : **37135162397**
Option 4 ID : **37135162398**
Status : **Answered**
Chosen Option : **3**

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Q.3

Which of the following oxyacid of sulphur contains S=S linkage?

Ans

✗ 1. $H_2S_2O_4$

✗ 2. H_2SO_3

✗ 3. $H_2S_2O_5$

✓ 4. $H_2S_2O_2$

Question Type : **MCQ**
Question ID : **37135115561**
Option 1 ID : **37135162243**
Option 2 ID : **37135162241**
Option 3 ID : **37135162244**
Option 4 ID : **37135162242**
Status : **Answered**
Chosen Option : **4**

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Q.4

Methoxy ethane on reaction with hot concentrated HI gives

Ans

1. iodomethane and ethanol

2. iodomethane and iodoethane

3. methanol and ethanol

4. methanol and iodoethane

Question Type :	**MCQ**
Question ID :	**37135115569**
Option 1 ID :	**37135162273**
Option 2 ID :	**37135162275**
Option 3 ID :	**37135162276**
Option 4 ID :	**37135162274**
Status :	**Answered**
Chosen Option :	**2**

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Q.5

When alkyl halide is boiled with large excess of alcoholic ammonia it forms

Ans

1. primary amine

2. tertiary amine

3. secondary amine

4. quaternary ammonium salt

Question Type : **MCQ**
Question ID : **37135115565**
Option 1 ID : **37135162257**
Option 2 ID : **37135162259**
Option 3 ID : **37135162258**
Option 4 ID : **37135162260**
Status : **Answered**
Chosen Option : **1**

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Q.6

Which of the following pairs of solution is isotonic ?

(molar mass. urea = 60, sucrose = 342 g mol^{-1})

Ans

✔ 1.

$3{\cdot}0\ gL^{-1}$ urea and $17{\cdot}19\ gL^{-1}$ sucrose

✘ 2.

$0{\cdot}3\ gL^{-1}$ urea and $1{\cdot}719\ gL^{-1}$ sucrose

✘ 3.

$3{\cdot}0\ gL^{-1}$ urea and $1{\cdot}719\ gL^{-1}$ sucrose

✘ 4.

$0{\cdot}3\ gL^{-1}$ urea and $17{\cdot}19\ gL^{-1}$ sucrose

Question Type :	MCQ
Question ID :	37135115576
Option 1 ID :	37135162303
Option 2 ID :	37135162304
Option 3 ID :	37135162301
Option 4 ID :	37135162302
Status :	Answered
Chosen Option :	2

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Q.7

The P-P-P bond angle in white phosphorus is

Ans

1. 90°

2. $109^{\circ}28'$

3. 120°

4. 60°

Question Type : **MCQ**
Question ID : **37135115566**
Option 1 ID : **37135162263**
Option 2 ID : **37135162262**
Option 3 ID : **37135162261**
Option 4 ID : **37135162264**
Status : **Answered**
Chosen Option : **3**

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Q.8

Which of the following statement is NOT correct about solution ?

Ans

✗ 1.

The three states of matter solid, liquid and gas may play the role of either solute or solvent.

✗ 2.

The component of solution which constitute smaller part is called solute.

✗ 3.

When water is solvent, the process of solvation is known as hydration.

✓ 4.

True solution is a heterogenous mixture of two or more substances with fixed composition.

Question Type :	**MCQ**
Question ID :	**37135115584**
Option 1 ID :	**37135162336**
Option 2 ID :	**37135162335**
Option 3 ID :	**37135162333**
Option 4 ID :	**37135162334**
Status :	**Answered**
Chosen Option :	**4**

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Q.9 Enthalpy of fusion and enthalpy of vaporization for water respectively are 6·01 kJ mol^{-1} and 45·07kJ mol^{-1} at 0°C what is enthalpy of sublimation at 0°C ?

Ans

✗ 1. $27{\cdot}50kJ\ mol^{-1}$

✗ 2. $48{\cdot}07kJ\ mol^{-1}$

✓ 3. $51{\cdot}08kJ\ mol^{-1}$

✗ 4. $39{\cdot}06kJ\ mol^{-1}$

Question Type : **MCQ**
Question ID : **37135115564**
Option 1 ID : **37135162256**
Option 2 ID : **37135162255**
Option 3 ID : **37135162254**
Option 4 ID : **37135162253**
Status : **Answered**
Chosen Option : **3**

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Q.10

In the reaction

$2\ KClO_{3(s)} \longrightarrow 2KCl_{(s)} + 3\ O_{2(g)}\ \ \Delta H^\circ = -78$ kJ. If 33·6L of oxygen gas is liberated at S.T.P.

What is the mass of $KCl_{(s)}$ produced ? (at. mass K = 39, Cl = 35·5 g mol^{-1})

Ans

✗ 1. 48·0 g

✗ 2. 7·45 g

✗ 3. 24·0 g

✓ 4. 74·5 g

Question Type :	**MCQ**
Question ID :	**37135115597**
Option 1 ID :	**37135162387**
Option 2 ID :	**37135162385**
Option 3 ID :	**37135162386**
Option 4 ID :	**37135162388**
Status :	**Answered**
Chosen Option :	**3**

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Q.11

In resonance hybrid of ozone molecule, O-O bond length is

Ans

1. 128 pm

2. 134·5 pm

3. 121 pm

4. 148 pm

Question Type : **MCQ**
Question ID : **37135115593**
Option 1 ID : **37135162369**
Option 2 ID : **37135162372**
Option 3 ID : **37135162371**
Option 4 ID : **37135162370**
Status : **Answered**
Chosen Option : **3**

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Q.12

Which of the following changes will cause increase in vapour pressure of 1 molal aqueous KI solution at same temperature?

Ans

✗ 1. addition of 0·1 molal solution of NaCl

✗ 2. addition of 0·5 molal solution of Na_2SO_4

✓ 3. addition of water

✗ 4. addition of 1 molal KI solution

Question Type : **MCQ**
Question ID : **37135115581**
Option 1 ID : **37135162321**
Option 2 ID : **37135162322**
Option 3 ID : **37135162324**
Option 4 ID : **37135162323**
Status : **Answered**
Chosen Option : **4**

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Q.13 Which among the following elements is a soft element as compared to others

Ans

1. Co

2. Zn

3. W

4. Mo

Question Type : **MCQ**
Question ID : **37135115571**
Option 1 ID : **37135162281**
Option 2 ID : **37135162284**
Option 3 ID : **37135162283**
Option 4 ID : **37135162282**
Status : **Answered**
Chosen Option : **2**

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Q.14 Which among the following gas is bubbled through the brine solution during the preparation of sodium carbonate in Solvay's process ?

Ans

✔ 1. $CO_{2(g)}$

✘ 2. $N_{2(g)}$

✘ 3. $NO_{2(g)}$

✘ 4. $O_{2(g)}$

Question Type : **MCQ**
Question ID : **37135115582**
Option 1 ID : **37135162326**
Option 2 ID : **37135162328**
Option 3 ID : **37135162325**
Option 4 ID : **37135162327**
Status : **Answered**
Chosen Option : **4**

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Q.15

Which of the following is Rosenmund reduction?

Ans

✗ 1.

$$\text{R-C}\equiv\text{N}+2[\text{H}] \xrightarrow[\text{dil HCl}]{\text{SnCl}_2} \text{R-CH=NH.HCl} \xrightarrow{\text{H}_3\text{O}^+} \text{R-CHO} + \text{NH}_4\text{Cl}$$

✗ 2.

$$\text{R-CHO} \xrightarrow[-\text{H}_2\text{O}]{\text{H}_2\text{N-NH}_2} \text{R-CH=N-NH}_2 \xrightarrow[\Delta]{\text{KOH/ethylene glycol}} \text{RCH}_3 + \text{N}_2$$

✓ 3.

$$\text{Ar-CO-Cl} \xrightarrow[\text{Pd-BaSO}_4]{\text{H}_2} \text{Ar-CHO} + \text{HCl}$$

✗ 4.

$$\text{R-CO-R} + 4[\text{H}] \xrightarrow[\Delta]{\text{Zn-Hg/con.HCl}} \text{R-CH}_2 - \text{R} + \text{H}_2\text{O}$$

Question Type : **MCQ**
Question ID : **37135115588**
Option 1 ID : **37135162351**
Option 2 ID : **37135162352**
Option 3 ID : **37135162350**
Option 4 ID : **37135162349**
Status : **Answered**
Chosen Option : **3**

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Q.16 Identify the polymer obtained by heating n moles of isobutylene with n moles of isoprene at 100°C in presence of anhydrous $AlCl_3$

Ans

1. Butyl rubber

2. Buna-N

3. Buna-S

4. Neoprene rubber

Question Type : **MCQ**
Question ID : **37135115557**
Option 1 ID : **37135162228**
Option 2 ID : **37135162226**
Option 3 ID : **37135162225**
Option 4 ID : **37135162227**
Status : **Answered**
Chosen Option : **2**

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Q.17 In the reaction, $N_2 + 3H_2 \longrightarrow 2NH_3$, the rate of disappearance of H_2 is 0·02 M/s. The rate of appearance of NH_3 is

Ans

✔ 1. 0·0133 M/s

✘ 2. 0·023 M/s

✘ 3. 0·004 M/s

✘ 4. 0·032 M/s

Question Type : **MCQ**
Question ID : **37135115580**
Option 1 ID : **37135162318**
Option 2 ID : **37135162317**
Option 3 ID : **37135162320**
Option 4 ID : **37135162319**
Status : **Answered**
Chosen Option : **1**

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Q.18 Which among the following reactions occurs at the zone of slag formation in extraction of iron by blast furnace?

Ans

✗ 1. $C + \frac{1}{2} O_2 \longrightarrow CO$

✓ 2. $CaO + SiO_2 \longrightarrow CaSiO_3$

✗ 3. $Fe_2O_3 + 3CO \longrightarrow 2\,Fe + 3\,CO_2$

✗ 4. $Fe_2O_3 + 3C \longrightarrow 2\,Fe + 3\,CO$

Question Type : **MCQ**
Question ID : **37135115556**
Option 1 ID : **37135162224**
Option 2 ID : **37135162221**
Option 3 ID : **37135162223**
Option 4 ID : **37135162222**
Status : **Answered**
Chosen Option : **3**

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Q.19 Sodium crystallizes in bcc structure with radius $1{\cdot}86 \times 10^{-8}$cm. What is the edge length of unit cell of sodium?

Ans

1. $4{\cdot}3 \times 10^{-8}$cm

2. $3{\cdot}72 \times 10^{-8}$cm

3. $7{\cdot}44 \times 10^{-8}$cm

4. $5{\cdot}26 \times 10^{-8}$cm

Question Type : **MCQ**
Question ID : **37135115599**
Option 1 ID : **37135162395**
Option 2 ID : **37135162393**
Option 3 ID : **37135162396**
Option 4 ID : **37135162394**
Status : **Answered**
Chosen Option : **4**

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Q.20 According to Andrews isothermals at what temperature the carbondioxide gas starts to condense at 73 atmosphere?

Ans

1. 21·5°C

2. 30·98°C

3. 13·1°C

4. 48·1°C

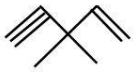
Question Type : **MCQ**
Question ID : **37135115559**
Option 1 ID : **37135162234**
Option 2 ID : **37135162235**
Option 3 ID : **37135162233**
Option 4 ID : **37135162236**
Status : **Answered**
Chosen Option : **3**

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Q.21

How many pi bonds and sigma bond are present in following molecule?



Ans

1. $5\pi, 14\ \sigma$ - bonds

2. $3\pi, 17\ \sigma$ - bonds

3. $3\pi, 16\ \sigma$ - bonds

4. $2\pi, 17\ \sigma$ - bonds

Question Type : **MCQ**
Question ID : **37135115585**
Option 1 ID : **37135162338**
Option 2 ID : **37135162337**
Option 3 ID : **37135162340**
Option 4 ID : **37135162339**
Status : **Answered**
Chosen Option : **3**

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Q.22 Which among the following coordination compounds does not have coordination number equal to number of ligands ?

Ans

✗ 1. $[Pt(NH_3)_6]^{4+}$

✓ 2. $[Co(en)_3]^{3+}$

✗ 3. $[Cu(NH_3)_4]^{2+}$

✗ 4. $[Co(NH_3)_6]^{3+}$

Question Type : **MCQ**
Question ID : **37135115595**
Option 1 ID : **37135162379**
Option 2 ID : **37135162380**
Option 3 ID : **37135162377**
Option 4 ID : **37135162378**
Status : **Answered**
Chosen Option : **2**

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Q.23 Which among the following statements about terpenes is NOT true?

Ans

✗ 1.

Terpenes occur in essential oils

✗ 2.

Terpenes include vitamin A, E and K

✗ 3.

Terpenes consist of isoprene units

✓ 4.

Terpenes are saturated hydrocarbons

Question Type :	**MCQ**
Question ID :	**37135115574**
Option 1 ID :	**37135162296**
Option 2 ID :	**37135162295**
Option 3 ID :	**37135162293**
Option 4 ID :	**37135162294**
Status :	**Answered**
Chosen Option :	**3**

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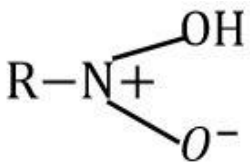
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Q.24

Identify 'A' in the following reaction

$$\text{R-NO}_2 \xrightarrow[\text{neutral medium}]{\text{Zn/NH}_4\text{Cl}} \text{A} + \text{H}_2\text{O}$$

Ans

✗ 1. 

✓ 2. R-NH-OH

✗ 3. R-COOH

✗ 4. R-NH_2

Question Type : **MCQ**
Question ID : **37135115592**
Option 1 ID : **37135162368**
Option 2 ID : **37135162366**
Option 3 ID : **37135162367**
Option 4 ID : **37135162365**
Status : **Answered**
Chosen Option : **2**

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Q.25

Which of following antihistamine contain -CN group ?

Ans

✗ 1. Dimetapp

✓ 2. Cimetidine

✗ 3. Terfenadine

✗ 4. Ranitidine

Question Type :	**MCQ**
Question ID :	**37135115552**
Option 1 ID :	**37135162208**
Option 2 ID :	**37135162205**
Option 3 ID :	**37135162207**
Option 4 ID :	**37135162206**
Status :	**Answered**
Chosen Option :	**2**

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Q.26

Identify the product Y in following reaction



Ans

1. Gluconic acid

2. Saccharic acid

3. n-Hexane

4. Glucoxime

Question Type : **MCQ**
Question ID : **37135115579**
Option 1 ID : **37135162314**
Option 2 ID : **37135162315**
Option 3 ID : **37135162316**
Option 4 ID : **37135162313**
Status : **Answered**
Chosen Option : **1**

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Q.27 When carbolic acid is heated with concentrated nitric acid in presence of concentrated sulphuric acid it forms

Ans

✗ 1. benzoic acid

✓ 2. picric acid

✗ 3. phthalic acid

✗ 4. benzene sulphonic acid

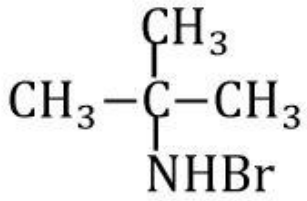
Question Type : **MCQ**
Question ID : **37135115577**
Option 1 ID : **37135162305**
Option 2 ID : **37135162307**
Option 3 ID : **37135162308**
Option 4 ID : **37135162306**
Status : **Answered**
Chosen Option : **2**

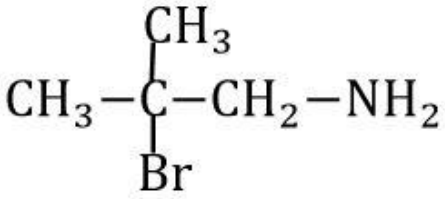
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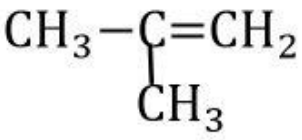
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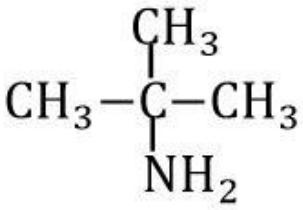
Q.28 Which of the following compounds is obtained when t-butyl bromide is treated with alcoholic ammonia?

Ans

✗ 1. 

✗ 2. 

✓ 3. 

✗ 4. 

Question Type :	MCQ
Question ID :	37135115598
Option 1 ID :	37135162392
Option 2 ID :	37135162391
Option 3 ID :	37135162390
Option 4 ID :	37135162389
Status :	Answered
Chosen Option :	3

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Q.29

For the following reaction

$Fe_2O_{3(s)} + 3CO_{(g)} \longrightarrow 2Fe_{(s)} + 3CO_{2(g)}$ $\Delta H° = -29{\cdot}8$ kJ
and $\Delta S° = 15\ JK^{-1}$. What is the value of $\Delta S_{(total)}$ at 298 K ?

Ans

✗ 1. 29·8 J

✗ 2. 100·0 J

✗ 3. 298·0 J

✓ 4. 115·0 J

Question Type : **MCQ**
Question ID : **37135115567**
Option 1 ID : **37135162265**
Option 2 ID : **37135162266**
Option 3 ID : **37135162268**
Option 4 ID : **37135162267**
Status : **Answered**
Chosen Option : **2**

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Q.30

What is the oxidation number of carbon in glucose?

Ans

1. -6

2. $+6$

3. $+3$

4. Zero

Question Type :	**MCQ**
Question ID :	**37135115562**
Option 1 ID :	**37135162248**
Option 2 ID :	**37135162246**
Option 3 ID :	**37135162247**
Option 4 ID :	**37135162245**
Status :	**Answered**
Chosen Option :	**3**

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Q.31 The rate constant for a second order reaction, A → Product is 1·62 M^{-1} s^{-1}. What will be the rate of reaction when concentration of reactant is 2×10^{-3} M ?

Ans

✗ 1. $3\cdot24\times10^{-3}\ Ms^{-1}$

✗ 2. $3\cdot24\times10^{-6}\ Ms^{-1}$

✓ 3. $6\cdot48\times10^{-6}\ Ms^{-1}$

✗ 4. $2\times10^{-3}\ Ms^{-1}$

Question Type : **MCQ**
Question ID : **37135115558**
Option 1 ID : **37135162229**
Option 2 ID : **37135162230**
Option 3 ID : **37135162232**
Option 4 ID : **37135162231**
Status : **Answered**
Chosen Option : **2**

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Q.32

Calcite crystals used in Nicol's prism are formed of

Ans

✗ 1. CaC_2

✓ 2. $CaCO_3$

✗ 3. $CaCl_2$

✗ 4. CaO

Question Type : **MCQ**
Question ID : **37135115555**
Option 1 ID : **37135162218**
Option 2 ID : **37135162220**
Option 3 ID : **37135162219**
Option 4 ID : **37135162217**
Status : **Answered**
Chosen Option : **2**

Q.33

H_2 molecule is more stable than Li_2 molecule, because

Ans ✗ 1.

In H_2 molecule σ_{1S} molecular orbitals are shielded by electrons.

✗ 2. In H_2 bond order is one.

✗ 3.

In Li_2 molecule σ_{1S} molecular orbitals are shielded by electrons.

✓ 4.

In Li_2 molecule, outer σ_{2S} molecular orbitals are shielded by the inner electrons.

Question Type : **MCQ**
Question ID : **37135115575**
Option 1 ID : **37135162298**
Option 2 ID : **37135162300**
Option 3 ID : **37135162297**
Option 4 ID : **37135162299**
Status : **Answered**
Chosen Option : **4**

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Q.34 Which of the following monomers is used in manufacture of Neoprene rubber?

Ans

✗ 1. 1,3-Butadien

✗ 2. styrene

✓ 3. 2-chlorobuta-1,3-diene

✗ 4. Isobutylene

Question Type : **MCQ**
Question ID : **37135115563**
Option 1 ID : **37135162249**
Option 2 ID : **37135162252**
Option 3 ID : **37135162250**
Option 4 ID : **37135162251**
Status : **Answered**
Chosen Option : **3**

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Q.35

The unit of atomic mass, amu is replaced by u, here u stands for

Ans

✔ 1. unified mass

✘ 2. united mass

✘ 3. unique mass

✘ 4. universal mass

Question Type : **MCQ**
Question ID : **37135115554**
Option 1 ID : **37135162215**
Option 2 ID : **37135162214**
Option 3 ID : **37135162216**
Option 4 ID : **37135162213**
Status : **Answered**
Chosen Option : **1**

Q.36

What is the lowest oxidation state possessed by phosphorus in its oxyacids?

Ans

✘ 1. +4

✘ 2. +2

✘ 3. +5

✔ 4. +1

Question Type : **MCQ**
Question ID : **37135115578**
Option 1 ID : **37135162311**
Option 2 ID : **37135162309**
Option 3 ID : **37135162312**
Option 4 ID : **37135162310**
Status : **Answered**
Chosen Option : **4**

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Q.37 What happens during bessemerization process of extraction of copper from copper pyrites?

Ans

✗ 1.

Au and Ag metals are deposited as anode mud.

✗ 2.

Impurities as As and Sb are removed as volatile oxides.

✓ 3.

Cu is obtained by auto reduction of Cu_2O and Cus.

✗ 4.

Iron is removed in the form of slag.

Question Type :	**MCQ**
Question ID :	**37135115553**
Option 1 ID :	**37135162211**
Option 2 ID :	**37135162209**
Option 3 ID :	**37135162212**
Option 4 ID :	**37135162210**
Status :	**Answered**
Chosen Option :	**2**

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Q.38 What is the common unit of conductivity if the dimensions are expressed in centimeter?

Ans

1. $\Omega\,cm^{-1}$

2. $\Omega^{-1}cm^{-1}$

3. $\Omega\,cm$

4. $\Omega^{-1}cm$

Question Type : **MCQ**
Question ID : **37135115572**
Option 1 ID : **37135162285**
Option 2 ID : **37135162286**
Option 3 ID : **37135162288**
Option 4 ID : **37135162287**
Status : **Answered**
Chosen Option : **2**

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Q.39

Blurring of vision is a side effect caused by the use of

Ans

1. antibiotics

2. antacids

3. tranquilizers

4. analgesics

Question Type : **MCQ**
Question ID : **37135115568**
Option 1 ID : **37135162269**
Option 2 ID : **37135162272**
Option 3 ID : **37135162270**
Option 4 ID : **37135162271**
Status : **Answered**
Chosen Option : **3**

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Q.40

Identify 'Z' in the following series of reaction



Ans

✗ 1. Butan-1-ol

✗ 2. 2-chlorobutane

✓ 3. Butan-2-ol

✗ 4. But-2-ene

Question Type : **MCQ**
Question ID : **37135115551**
Option 1 ID : **37135162203**
Option 2 ID : **37135162201**
Option 3 ID : **37135162204**
Option 4 ID : **37135162202**
Status : **Answered**
Chosen Option : **3**

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Q.41

What is the boiling point of heavy water?

Ans

1. 100·4°C

2. 101·4°C

3. 273°C

4. 100°C

Question Type : **MCQ**
Question ID : **37135115587**
Option 1 ID : **37135162346**
Option 2 ID : **37135162347**
Option 3 ID : **37135162348**
Option 4 ID : **37135162345**
Status : **Answered**
Chosen Option : **2**

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Q.42

What is effective atomic number of Fe in $[Fe(CN)_6]^{4-}$ (At. no. of Fe =26)

Ans

✗ 1. 34

✗ 2. 26

✓ 3. 36

✗ 4. 35

Question Type : **MCQ**
Question ID : **37135115586**
Option 1 ID : **37135162344**
Option 2 ID : **37135162341**
Option 3 ID : **37135162342**
Option 4 ID : **37135162343**
Status : **Answered**
Chosen Option : **3**

Q.43

Which among the following elements has lowest density and is lightest?

Ans

✓ 1. Scandium

✗ 2. Cobalt

✗ 3. Copper

✗ 4. Iron

Question Type : **MCQ**
Question ID : **37135115596**
Option 1 ID : **37135162382**
Option 2 ID : **37135162384**
Option 3 ID : **37135162381**
Option 4 ID : **37135162383**
Status : **Answered**
Chosen Option : **2**

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Q.44

What is the value of radius ratio of ionic crystal having coordination number six?

Ans

1. Greater than 0·732

2. In between 0·414 to 0·732

3. In between 0·225 to 0·414

4. Less than 0·225

Question Type : **MCQ**
Question ID : **37135115591**
Option 1 ID : **37135162362**
Option 2 ID : **37135162363**
Option 3 ID : **37135162364**
Option 4 ID : **37135162361**
Status : **Answered**
Chosen Option : **1**

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Q.45 What is the molar conductivity of 0·1 M NaCl if it's conductivity is $1{\cdot}06 \times 10^{-2}\Omega^{-1}cm^{-1}$?

Ans

✔ 1. $1{\cdot}06 \times 10^{2}\Omega^{-1}cm^{2}mol^{-1}$

✘ 2. $1{\cdot}06 \times 10^{-2}\Omega^{-1}cm^{2}mol^{-1}$

✘ 3. $9{\cdot}4 \times 10^{-2}\Omega^{-1}cm^{2}mol^{-1}$

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

Question Type : **MCQ**
Question ID : **37135115594**
Option 1 ID : **37135162374**
Option 2 ID : **37135162373**
Option 3 ID : **37135162376**
Option 4 ID : **37135162375**
Status : **Answered**
Chosen Option : **1**

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Q.46 If a mixture of iodomethane and iodoethane is treated with sodium metal in presence of dry ether it forms

Ans

1. propane and ethane

2. ethane and butane

3. propane and butane

4. ethane, propane and butane

Question Type : MCQ
Question ID : 37135115560
Option 1 ID : 37135162237
Option 2 ID : 37135162238
Option 3 ID : 37135162239
Option 4 ID : 37135162240
Status : Answered
Chosen Option : 4

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Q.47

Which of the following reactions does NOT yield an amine

Ans

✗ 1. $\text{R-X} + \text{NH}_{3(\text{alco})} \longrightarrow$

✗ 2. $\text{R-NO}_2 \xrightarrow{\text{Sn/conc.HCl}}$

✗ 3. $\text{R-CH=NOH} \xrightarrow[\text{C}_2\text{H}_5\text{OH}]{\text{Na}}$

✓ 4. $\text{R-CN} + \text{H}_2\text{O} \xrightarrow{H^+}$

Question Type :	**MCQ**
Question ID :	**37135115583**
Option 1 ID :	**37135162329**
Option 2 ID :	**37135162332**
Option 3 ID :	**37135162330**
Option 4 ID :	**37135162331**
Status :	**Not Answered**
Chosen Option :	**--**

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Q.48 Which of the following carbonyl compounds does NOT undergo aldol condensation?

Ans

1. Acetone

2. Benzophenone

3. Acetaldehyde

4. Acetophenone

Question Type : **MCQ**
Question ID : **37135115573**
Option 1 ID : **37135162290**
Option 2 ID : **37135162292**
Option 3 ID : **37135162289**
Option 4 ID : **37135162291**
Status : **Not Answered**
Chosen Option : **--**

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Q.49

Calculate the number of unit cells in 38·6 g of noble metal haven density 19·3 g cm^{-3} and volume of one unit cell is $6{\cdot}18 \times 10^{-23} cm^3$?

Ans

✔ 1. $3{\cdot}236 \times 10^{22}$

✘ 2. $6{\cdot}180 \times 10^{23}$

✘ 3. $6{\cdot}236 \times 10^{20}$

✘ 4. $3{\cdot}236 \times 10^{23}$

Question Type : **MCQ**
Question ID : **37135115590**
Option 1 ID : **37135162358**
Option 2 ID : **37135162359**
Option 3 ID : **37135162357**
Option 4 ID : **37135162360**
Status : **Not Answered**
Chosen Option : **--**

Q.50

What is the percentage of formaldehyde in formalin ?

Ans

✘ 1. 60%

✔ 2. 40%

✘ 3. 10%

✘ 4. 20%

Question Type : **MCQ**
Question ID : **37135115589**
Option 1 ID : **37135162356**
Option 2 ID : **37135162355**
Option 3 ID : **37135162353**
Option 4 ID : **37135162354**
Status : **Answered**
Chosen Option : **3**

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Section : Mathematics

Q.1

$$\int \frac{dx}{\sqrt{5+4x-x^2}} =$$

Ans

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

✘ 2. $\log\left|(x-2)+\sqrt{5+4x-x^2}\right|+c$

✘ 3. $\log\left|(x+2)+\sqrt{5+4x-x^2}\right|+c$

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

Question Type : **MCQ**
Question ID : **37135115647**
Option 1 ID : **37135162585**
Option 2 ID : **37135162587**
Option 3 ID : **37135162588**
Option 4 ID : **37135162586**
Status : **Answered**
Chosen Option : **1**

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Q.2

Degree of the differential equation $e^{\frac{dy}{dx}} + \left(\frac{dy}{dx}\right)^3 = x$ is

Ans

✗ 1. 2

✗ 2. 1

✓ 3. not defined

✗ 4. 3

Question Type : **MCQ**
Question ID : **37135115604**
Option 1 ID : **37135162413**
Option 2 ID : **37135162414**
Option 3 ID : **37135162416**
Option 4 ID : **37135162415**
Status : **Answered**
Chosen Option : **3**

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Q.3

If $cos\ 2\theta\ =\ sin\ \propto,\quad$ then $\theta =$

Ans

1. $2n\pi\ \pm\ \left(\frac{\pi}{2}-\propto\right), n\in z$

2. $n\pi\ \pm\ \left(\frac{\pi}{4}+\frac{\propto}{2}\right), n\in z$

3. $\frac{1}{2}[n\pi+(-1)^n\propto], n\in z$

4. $n\pi\ \pm\left(\frac{\pi}{4}-\frac{\propto}{2}\right), n\in z$

Question Type : **MCQ**
Question ID : **37135115625**
Option 1 ID : **37135162498**
Option 2 ID : **37135162497**
Option 3 ID : **37135162500**
Option 4 ID : **37135162499**
Status : **Answered**
Chosen Option : **4**

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Q.4

The solution of differential equation $x^2 \frac{dy}{dx} = y^2 + xy$ is

Ans

1. $\frac{x}{y} + \log|x| = c$

2. $\frac{y}{x} + \log|x| = c$

3. $\frac{x}{y} - \log|x| = c$

4. $\frac{y}{x} - \log|x| = c$

Question Type : MCQ
Question ID : 37135115628
Option 1 ID : 37135162511
Option 2 ID : 37135162509
Option 3 ID : 37135162510
Option 4 ID : 37135162512
Status : Answered
Chosen Option : 1

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Q.5

The maximum value of the function $y = e^{5+\sqrt{3}\sin x+\cos x}$ is

Ans

✔ 1. e^7

✘ 2. e^2

✘ 3. e^5

✘ 4. e^8

Question Type :	**MCQ**
Question ID :	**37135115620**
Option 1 ID :	**37135162477**
Option 2 ID :	**37135162479**
Option 3 ID :	**37135162478**
Option 4 ID :	**37135162480**
Status :	**Answered**
Chosen Option :	**1**

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Q.6 If $Z = 7x + y$ subject to $5x + y \geq 5$, $x + y \geq 3$, $x \geq 0$, $y \geq 0$, then minimum value of Z is

Ans

1. 2

2. 5

3. 6

4. 3

Question Type : **MCQ**
Question ID : **37135115618**
Option 1 ID : **37135162470**
Option 2 ID : **37135162472**
Option 3 ID : **37135162469**
Option 4 ID : **37135162471**
Status : **Answered**
Chosen Option : **2**

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Q.7

If $y = tan^{-1}(secx + tanx)$, then $\frac{dy}{dx} =$

Ans

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

2. 1

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

4. -1

Question Type : MCQ
Question ID : 37135115612
Option 1 ID : 37135162448
Option 2 ID : 37135162446
Option 3 ID : 37135162447
Option 4 ID : 37135162445
Status : Answered
Chosen Option : 2

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Q.8 The displacement of a particle at the time t is given by $s = \sqrt{1+t}$, then its acceleration 'a' is proportional to

Ans

✗ 1. square of the velocity

✗ 2. $\sqrt[3]{s}$

✗ 3. $\sqrt{s}$

✓ 4. cube of the velocity

Question Type : **MCQ**
Question ID : **37135115637**
Option 1 ID : **37135162545**
Option 2 ID : **37135162546**
Option 3 ID : **37135162548**
Option 4 ID : **37135162547**
Status : **Answered**
Chosen Option : **4**

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Q.9

If $\overline{a} = \frac{1}{\sqrt{10}}(3\hat{i} + \hat{k})$, $\overline{b} = \frac{1}{7}(2\hat{i} + 3\hat{j} - 6\hat{k})$, then the value of

$(2\overline{a} - \overline{b}).[(\overline{a} \times \overline{b}) \times (\overline{a} + 2\overline{b})]$ is

Ans

1. 7

2. -5

3. 5

4. -7

Question Type : **MCQ**
Question ID : **37135115638**
Option 1 ID : **37135162552**
Option 2 ID : **37135162549**
Option 3 ID : **37135162550**
Option 4 ID : **37135162551**
Status : **Answered**
Chosen Option : **2**

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Q.10 If the body cools from 135°c to 80°c at room temperature of 25°c in 60 minutes, then the temperature of body after 2 hours is

Ans

✔ 1. $(52.5)°c$

✗ 2. $(10.5)°c$

✗ 3. $(52.75)°c$

✗ 4. $(10.75)°c$

Question Type : **MCQ**
Question ID : **37135115624**
Option 1 ID : **37135162495**
Option 2 ID : **37135162493**
Option 3 ID : **37135162496**
Option 4 ID : **37135162494**
Status : **Answered**
Chosen Option : **4**

Q.11 The statement pattern $[(p \vee q) \wedge \sim p] \wedge (\sim q)$ is

Ans

✔ 1. a contradiction

✗ 2. equivalent to $p \wedge q$

✗ 3. a contingency

✗ 4. a tautology

Question Type : **MCQ**
Question ID : **37135115613**
Option 1 ID : **37135162450**
Option 2 ID : **37135162452**
Option 3 ID : **37135162451**
Option 4 ID : **37135162449**
Status : **Answered**
Chosen Option : **1**

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Q.12 Two cards are drawn from a pack of well shuffled 52 playing cards one by one without replacement. Then the probability that both cards are queens is

Ans

1. $\frac{1}{221}$

2. $\frac{1}{220}$

3. $\frac{3}{220}$

4. $\frac{2}{221}$

Question Type : **MCQ**
Question ID : **37135115623**
Option 1 ID : **37135162489**
Option 2 ID : **37135162490**
Option 3 ID : **37135162492**
Option 4 ID : **37135162491**
Status : **Answered**
Chosen Option : **1**

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Q.13

$$\int_0^{\frac{\pi}{2}} \frac{\sin x \cos x}{1+\sin^4 x}\,dx =$$

Ans

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

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

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

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

Question Type :	MCQ
Question ID :	37135115649
Option 1 ID :	37135162595
Option 2 ID :	37135162596
Option 3 ID :	37135162593
Option 4 ID :	37135162594
Status :	Answered
Chosen Option :	2

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Q.14

$tan1° \times tan2° \times tan3° \times$---------- $\times tan89° =$

Ans

1. $\sqrt{3}$

2. 1

3. $\sqrt{2}$

4. 2

Question Type :	MCQ
Question ID :	37135115606
Option 1 ID :	37135162422
Option 2 ID :	37135162421
Option 3 ID :	37135162423
Option 4 ID :	37135162424
Status :	Answered
Chosen Option :	2

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Q.15

If θ is a parameter, then the parametric equations of the circle $x^2+y^2-6x+4y-3=0$ are given by

Ans

1. $x=-3+4\sin\theta$ and $y=-2+4\cos\theta$

2. $x=3+4\cos\theta$ and $y=-2+4\sin\theta$

3. $x=3+4\sin\theta$ and $y=2+4\cos\theta$

4. $x=3+4\cos\theta$ and $y=2+4\sin\theta$

Question Type :	MCQ
Question ID :	37135115631
Option 1 ID :	37135162524
Option 2 ID :	37135162521
Option 3 ID :	37135162523
Option 4 ID :	37135162522
Status :	Answered
Chosen Option :	2

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Q.16

If $[\bar{a}\ \ \bar{b}\ \ \bar{c}] = 4$, then volume of parallelopiped with coterminus edges $\bar{a} + 2\bar{b}$, $\bar{b} + 2\bar{c}$, $\bar{c} + 2\bar{a}$ is

Ans

✔ 1. 36 units^3

✘ 2. 32 units^3

✘ 3. 20 units^3

✘ 4. 40 units^3

Question Type : **MCQ**
Question ID : **37135115646**
Option 1 ID : **37135162584**
Option 2 ID : **37135162581**
Option 3 ID : **37135162583**
Option 4 ID : **37135162582**
Status : **Answered**
Chosen Option : **1**

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Q.17

If $A = \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$, such that $A^2 - 4A + 3I = 0$, then $A^{-1} =$

Ans

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

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

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

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

Question Type :	MCQ
Question ID :	37135115621
Option 1 ID :	37135162481
Option 2 ID :	37135162484
Option 3 ID :	37135162483
Option 4 ID :	37135162482
Status :	Answered
Chosen Option :	4

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Q.18

If $secx + tanx = 3,\ x \epsilon \left(0, \frac{\pi}{2}\right)$ then, $\sin x =$

Ans

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

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

3. -1

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

Question Type : **MCQ**
Question ID : **37135115602**
Option 1 ID : **37135162405**
Option 2 ID : **37135162406**
Option 3 ID : **37135162408**
Option 4 ID : **37135162407**
Status : **Answered**
Chosen Option : **2**

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Q.19

If $x = logt,\ y + 1 = \frac{1}{t},$ then $e^{-x}\ \frac{d^2x}{dy^2} + \frac{dx}{dy} =$

Ans

✔ 1. 0

✘ 2. 2

✘ 3. -1

✘ 4. 1

Question Type : **MCQ**
Question ID : **37135115608**
Option 1 ID : **37135162429**
Option 2 ID : **37135162432**
Option 3 ID : **37135162431**
Option 4 ID : **37135162430**
Status : **Answered**
Chosen Option : **1**

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Q.20

The particular solution of the differential equation

$\sin^2 y\frac{dx}{dy} + x = \cot y$ when $x = 0$ and $y = \frac{3\pi}{4}$ is

Ans

1. $x = 1 + \cot y$

2. $xy = \cot\,(x + y)$

3. $xy = \cot\,(x - y)$

4. $y = 1 + \cot x$

Question Type :	MCQ
Question ID :	37135115626
Option 1 ID :	37135162501
Option 2 ID :	37135162503
Option 3 ID :	37135162504
Option 4 ID :	37135162502
Status :	Answered
Chosen Option :	3

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Q.21 If $A = \{2, 4\}$, $B = \{3, 4, 5\}$, then $(A \cap B) \times (A \cup B) =$

Ans

1. $\{(3, 2), (3, 4), (4, 4), (5, 4)\}$

2. $\{(2, 3), (2, 4), (2, 5)\}$

3. $\{(4, 2), (4, 3), (4, 4), (4, 5)\}$

4. $\{(4, 3), (4, 4), (4, 5)\}$

Question Type : **MCQ**
Question ID : **37135115636**
Option 1 ID : **37135162544**
Option 2 ID : **37135162543**
Option 3 ID : **37135162541**
Option 4 ID : **37135162542**
Status : **Answered**
Chosen Option : **3**

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Q.22

If $f(x) = |x-2|,\ x \in [0,4]$ then the Rolle's theorem cannot be applied to the function because

Ans

✔ 1.

The function is not differentiable at every point in the $(0, 4)$.

✘ 2. $f(4) \neq f(0)$.

✘ 3.

Function is not well-defined in the domain.

✘ 4.

The function is not continuous at every point in the $[0, 4]$.

Question Type :	**MCQ**
Question ID :	**37135115643**
Option 1 ID :	**37135162570**
Option 2 ID :	**37135162571**
Option 3 ID :	**37135162572**
Option 4 ID :	**37135162569**
Status :	**Answered**
Chosen Option :	**1**

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Q.23

$$\int_0^{\infty} \frac{dx}{(x^2+4)(x^2+9)} =$$

Ans

1. $\frac{\pi}{120}$

2. $\frac{\pi}{60}$

3. $\frac{\pi}{80}$

4. $\frac{-\pi}{60}$

Question Type : MCQ
Question ID : 37135115630
Option 1 ID : 37135162518
Option 2 ID : 37135162517
Option 3 ID : 37135162520
Option 4 ID : 37135162519
Status : Answered
Chosen Option : 2

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Q.24

If $y = 3e^{5x} + 5e^{3x}$, then $\frac{d^2y}{dx^2} - 8\frac{dy}{dx} =$

Ans

✗ 1. $-10y$

✗ 2. $15y$

✓ 3. $-15y$

✗ 4. $10y$

Question Type :	MCQ
Question ID :	37135115635
Option 1 ID :	37135162540
Option 2 ID :	37135162539
Option 3 ID :	37135162538
Option 4 ID :	37135162537
Status :	Answered
Chosen Option :	3

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Q.25

If $\frac{2+4+6+8 \text{ -------upto } n \text{ terms}}{1+3+5+7\text{-------upto } n \text{ terms}} = \frac{37}{36}$, then $n =$

Ans

✔ 1. 36

✘ 2. 29

✘ 3. 23

✘ 4. 37

Question Type : **MCQ**
Question ID : **37135115619**
Option 1 ID : **37135162474**
Option 2 ID : **37135162476**
Option 3 ID : **37135162475**
Option 4 ID : **37135162473**
Status : **Answered**
Chosen Option : **1**

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Q.26

If $f(x) = 6\beta - 3 \propto x$, if $-4 \leq x < -2$

$= 4x + 1$, if $-2 \leq x \leq 2$

is continuous on $[-4, 2]$, then $\propto + \beta =$

Ans

1. $\frac{-7}{6}$

2. $\frac{4}{7}$

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

4. $\frac{7}{6}$

Question Type : MCQ
Question ID : 37135115603
Option 1 ID : 37135162412
Option 2 ID : 37135162409
Option 3 ID : 37135162410
Option 4 ID : 37135162411
Status : Answered
Chosen Option : 1

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Q.27

Which of the following statement pattern is a tautology?

$S_1 \equiv \sim p \longrightarrow (q \leftrightarrow p)$

$S_2 \equiv \sim p \vee \sim q$

$S_3 \equiv (p \longrightarrow q) \wedge (q \longrightarrow p)$

$S_4 \equiv (q \longrightarrow p) \vee (\sim p \leftrightarrow q)$

Ans

1. S_2

2. S_4

3. S_1

4. S_3

Question Type : **MCQ**
Question ID : **37135115601**
Option 1 ID : **37135162402**
Option 2 ID : **37135162404**
Option 3 ID : **37135162401**
Option 4 ID : **37135162403**
Status : **Answered**
Chosen Option : **2**

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Q.28

The value of m, if the vectors $\hat{i}-\hat{j}-6\hat{k}$, $\hat{i}-3\hat{j}+4\hat{k}$ and $2\hat{i}-5\hat{j}+m\hat{k}$ are coplanar, is

Ans

✗ 1. 1

✗ 2. -3

✓ 3. 3

✗ 4. -1

Question Type : **MCQ**
Question ID : **37135115634**
Option 1 ID : **37135162533**
Option 2 ID : **37135162536**
Option 3 ID : **37135162535**
Option 4 ID : **37135162534**
Status : **Answered**
Chosen Option : **3**

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Q.29

If two angles of $\triangle ABC$ are $\frac{\pi}{4}$ and $\frac{\pi}{3}$, then the ratio of the smallest and greatest side is

Ans

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

2. $(\sqrt{3} - 1) : 1$

3. $(\sqrt{3} + 1) : (\sqrt{3} - 1)$

4. $(\sqrt{3} + 1) : 1$

Question Type : **MCQ**
Question ID : **37135115632**
Option 1 ID : **37135162526**
Option 2 ID : **37135162527**
Option 3 ID : **37135162528**
Option 4 ID : **37135162525**
Status : **Answered**
Chosen Option : **2**

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Q.30

If $\frac{sin\,(A+B)}{Sin\,(A-B)} = \frac{cos\,(C+D)}{cos\,(C-D)}$, then tan A cot B =

Ans

✗ 1. $cotC\ cotD$

✗ 2. $-tanC\ tanD$

✗ 3. $tanC\ tanD$

✓ 4. $-cotC\ cotD$

Question Type : **MCQ**
Question ID : **37135115611**
Option 1 ID : **37135162444**
Option 2 ID : **37135162441**
Option 3 ID : **37135162443**
Option 4 ID : **37135162442**
Status : **Answered**
Chosen Option : **2**

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Q.31

If $O \equiv (0, 0, 0), P \equiv (1, \sqrt{2}, 1)$, then the acute angles made by the line OP with XOY,

YOZ, ZOX planes are, respectively

Ans

✗ 1. $45°, 45°, 60°$

✗ 2. $45°, 60°, 30°$

✗ 3. $60°, 45°, 60°$

✓ 4. $30°, 30°, 45°$

Question Type : **MCQ**
Question ID : **37135115648**
Option 1 ID : **37135162590**
Option 2 ID : **37135162592**
Option 3 ID : **37135162589**
Option 4 ID : **37135162591**
Status : **Answered**
Chosen Option : **3**

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Q.32

The equation of a plane containing the point $(1, -1, 1)$ and parallel to the plane $2x + 3y - 4z = 17$ is

Ans

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

2. $\bar{r}.(2\hat{i} + 3\hat{j} - 4\hat{k}) = -15$

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

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

Question Type : **MCQ**
Question ID : **37135115642**
Option 1 ID : **37135162567**
Option 2 ID : **37135162568**
Option 3 ID : **37135162566**
Option 4 ID : **37135162565**
Status : **Answered**
Chosen Option : **1**

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Q.33

The angle between the line $\frac{x-1}{2} = \frac{y+3}{1} = \frac{z+7}{2}$ and the plane $\bar{r}.(6\hat{i} - 2\hat{j} - 3\hat{k}) = 5$ is

Ans

✔ 1. $\sin^{-1}\left(\frac{4}{21}\right)$

✘ 2. $\cos^{-1}\left(\frac{4}{21}\right)$

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

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

Question Type : **MCQ**
Question ID : **37135115640**
Option 1 ID : **37135162557**
Option 2 ID : **37135162560**
Option 3 ID : **37135162559**
Option 4 ID : **37135162558**
Status : **Answered**
Chosen Option : **1**

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Q.34 The cartesian equation of the curve given by $x = 6\cos\theta,\ y = 6\sin\theta$ is

Ans

1. $x^2 + y^2 = 36$

2. $x^2 + y^2 = 5$

3. $x^2 + y^2 = 25$

4. $x^2 + y^2 = 6$

Question Type : **MCQ**
Question ID : **37135115627**
Option 1 ID : **37135162506**
Option 2 ID : **37135162508**
Option 3 ID : **37135162507**
Option 4 ID : **37135162505**
Status : **Answered**
Chosen Option : **1**

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Q.35

The auxiliary equation of the lines passing through the origin and having slopes $\sqrt{3}+1$ and $\sqrt{3}-1$ is

Ans

1. $m^2 - 2\sqrt{3}\,m + 2 = 0$

2. $m^2 - 2\sqrt{3}\,m - 2 = 0$

3. $m^2 + 2\sqrt{3}\,m - 2 = 0$

4. $m^2 + 2\sqrt{3}\,m + 2 = 0$

Question Type : **MCQ**
Question ID : **37135115607**
Option 1 ID : **37135162427**
Option 2 ID : **37135162428**
Option 3 ID : **37135162426**
Option 4 ID : **37135162425**
Status : **Answered**
Chosen Option : **1**

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Q.36 Which of the following functions is not p.d.f. of a continuous random variable X ?

F_1 given by

$f(x) = e^{-x}$ if $0 < x < \infty$

$= 0$, otherwise

F_2 given by

$f(x) = \frac{1}{4} \times \frac{1}{\sqrt{x}}$ if $0 < x < 4$

$= 0$, otherwise

F_3 given by

$f(x) = 6x(1-x)$ if $0 < x < 1$

$= 0$, otherwise

F_4 given by

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

$= 0$, otherwise

Ans

1. F_3

2. F_4

3. F_1

4. F_2

Question Type : MCQ
Question ID : 37135115614
Option 1 ID : 37135162455
Option 2 ID : 37135162456
Option 3 ID : 37135162453
Option 4 ID : 37135162454
Status : Answered
Chosen Option : 2

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Q.37 A random variable X takes the values 0, 1, 2. Its mean is 1·2. If $P(X=0)=0.3$, then $P(X=1) =$

Ans

✗ 1. 0.1

✗ 2. 0.5

✓ 3. 0.2

✗ 4. 0.4

Question Type : **MCQ**
Question ID : **37135115617**
Option 1 ID : **37135162465**
Option 2 ID : **37135162466**
Option 3 ID : **37135162468**
Option 4 ID : **37135162467**
Status : **Answered**
Chosen Option : **3**

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Q.38 If the equation $x^2 - 3xy + \lambda y^2 + 3x - 5y + 2 = 0$ represents a pair of lines, where λ is real number and θ is angle between them, then value of $\text{cosec}^2\ \theta$ is

Ans

1. 10

2. 3

3. 9

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

Question Type : **MCQ**
Question ID : **37135115609**
Option 1 ID : **37135162435**
Option 2 ID : **37135162434**
Option 3 ID : **37135162436**
Option 4 ID : **37135162433**
Status : **Answered**
Chosen Option : **1**

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Q.39

The rate of growth of bacteria is proportional to number present. If initially there were 1000 bacteria and the number doubles in 1 hour then the number of bacteria after $2\frac{1}{2}$ hours are (Given $\sqrt{2} = 1.414$)

Ans

✗ 1. 4646 approximately

✗ 2. 5056 approximately

✓ 3. 5656 approximately

✗ 4. $400\sqrt{2}$ approximately

Question Type : **MCQ**
Question ID : **37135115622**
Option 1 ID : **37135162488**
Option 2 ID : **37135162486**
Option 3 ID : **37135162485**
Option 4 ID : **37135162487**
Status : **Answered**
Chosen Option : **3**

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Q.40 The probability that a person wins a prize on a lottery ticket is $\frac{1}{4}$. If he purchases 5 lottery tickets at random, then the probability that he wins at least one prize is

Ans

1. $\frac{121}{1024}$

2. $\frac{774}{1024}$

3. $\frac{781}{1024}$

4. $\frac{223}{1024}$

Question Type : **MCQ**
Question ID : **37135115610**
Option 1 ID : **37135162440**
Option 2 ID : **37135162439**
Option 3 ID : **37135162438**
Option 4 ID : **37135162437**
Status : **Answered**
Chosen Option : **3**

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Q.41

$$\int_{-5}^{5} \left[\frac{e^x + e^{-x}}{e^x - e^{-x}}\right] dx =$$

Ans

1. 0 ✔

2. 1 ✘

3. $3e^5$ ✘

4. $2e^5$ ✘

Question Type :	**MCQ**
Question ID :	**37135115645**
Option 1 ID :	**37135162580**
Option 2 ID :	**37135162579**
Option 3 ID :	**37135162578**
Option 4 ID :	**37135162577**
Status :	**Answered**
Chosen Option :	**1**

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Q.42

With usual notations, in $\triangle ABC$, if $a=2,\ b=3,\ c=5$ and $\frac{\cos A}{a}+\frac{\cos B}{b}+\frac{\cos C}{c}=\frac{k+7}{30}$, then k =

Ans

1. 6

2. 16

3. 17

4. 12

Question Type : MCQ
Question ID : 37135115629
Option 1 ID : 37135162513
Option 2 ID : 37135162515
Option 3 ID : 37135162516
Option 4 ID : 37135162514
Status : Answered
Chosen Option : 4

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Q.43

$$\int e^{\cos^{-1}x}\left[\frac{x-\sqrt{1-x^2}}{\sqrt{1-x^2}}\right]dx =$$

Ans

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

2. $-x\,e^{cos^{-1}x}+c$

3. $-x\,e^{\sin^{-1}x}+c$

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

Question Type : **MCQ**
Question ID : **37135115641**
Option 1 ID : **37135162562**
Option 2 ID : **37135162563**
Option 3 ID : **37135162561**
Option 4 ID : **37135162564**
Status : **Answered**
Chosen Option : **2**

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Q.44

If $|3x-2| \leq \frac{1}{2}$ then $x \in$

Ans

1. $\left[\frac{1}{2}, \frac{5}{6}\right]$

2. $\left(\frac{1}{2}, \frac{5}{6}\right]$

3. $\left[\frac{1}{2}, \frac{5}{6}\right)$

4. $\left(\frac{1}{2}, \frac{5}{6}\right)$

Question Type : **MCQ**
Question ID : **37135115644**
Option 1 ID : **37135162574**
Option 2 ID : **37135162576**
Option 3 ID : **37135162575**
Option 4 ID : **37135162573**
Status : **Answered**
Chosen Option : **1**

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Q.45

The area of the region bounded by the parabola $y^2 = 8x$ and its latus rectum is

Ans

✗ 1. $\frac{16}{3}$ sq. units

✗ 2. $\frac{8}{3}$ sq. units

✓ 3. $\frac{32}{3}$ sq. units

✗ 4. $\frac{4}{3}$ sq. units

Question Type : **MCQ**
Question ID : **37135115633**
Option 1 ID : **37135162531**
Option 2 ID : **37135162530**
Option 3 ID : **37135162532**
Option 4 ID : **37135162529**
Status : **Answered**
Chosen Option : **3**

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Q.46

$$\int \frac{dx}{\cos x \sqrt{\cos 2x}} =$$

Ans

1. $\frac{1}{2}\log\left|tan\left(\frac{\pi}{4}+x\right)\right|+c$

2. $\frac{1}{2}\log\left|\frac{1-\tan x}{1+\tan x}\right|+c$

3. $2\log\left|\frac{1+\tan x}{1-\tan x}\right|+c$

4. $\sin^{-1}(tanx)+c$

Question Type :	MCQ
Question ID :	37135115639
Option 1 ID :	37135162554
Option 2 ID :	37135162555
Option 3 ID :	37135162553
Option 4 ID :	37135162556
Status :	Answered
Chosen Option :	2

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Q.47 If cartesian equation of the line is $x-1=2y+3=3-z$, then its vector equation is

Ans

1. $\bar{r}=(\hat{\imath}-3\hat{\jmath}+3\hat{k})+\lambda(2\hat{\imath}+\hat{\jmath}-2\hat{k})$

2. $\bar{r}=(-\hat{\imath}-3\hat{\jmath}+3\hat{k})+\lambda(\hat{\imath}+\frac{1}{2}\hat{\jmath}-\hat{k})$

3. $\bar{r}=(-\hat{\imath}+\frac{3}{2}\hat{\jmath}-3\hat{k})+\lambda(2\hat{\imath}+\hat{\jmath}-2\hat{k})$

4. $\bar{r}=(\hat{\imath}-\frac{3}{2}\hat{\jmath}+3\hat{k})+\lambda(2\hat{\imath}+\hat{\jmath}-2\hat{k})$

Question Type : **MCQ**
Question ID : **37135115650**
Option 1 ID : **37135162597**
Option 2 ID : **37135162599**
Option 3 ID : **37135162600**
Option 4 ID : **37135162598**
Status : **Answered**
Chosen Option : **4**

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Q.48 The line through the points $(1, 4), (-5, 1)$ intersects the line $4x + 3y - 5 = 0$ in the point

Ans

✗ 1. $(-1, -3)$

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

✓ 3. $(-1, 3)$

✗ 4. $(2, 1)$

Question Type :	**MCQ**
Question ID :	**37135115616**
Option 1 ID :	**37135162464**
Option 2 ID :	**37135162463**
Option 3 ID :	**37135162462**
Option 4 ID :	**37135162461**
Status :	**Answered**
Chosen Option :	**3**

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Q.49

Which of the following matrix is invertible ?

$$A_1 = \begin{bmatrix} 4 & 2 \\ 2 & 1 \end{bmatrix}$$

$$A_2 = \begin{bmatrix} -1 & -2 & 3 \\ 4 & 5 & 7 \\ 2 & 4 & -6 \end{bmatrix}$$

$$A_3 = \begin{bmatrix} 1 & 0 & 0 \\ 5 & 2 & 1 \\ 7 & 2 & 1 \end{bmatrix}$$

$$A_4 = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$$

Ans

✗ 1. A_1

✗ 2. A_3

✓ 3. A_4

✗ 4. A_2

Question Type : MCQ
Question ID : 37135115615
Option 1 ID : 37135162457
Option 2 ID : 37135162459
Option 3 ID : 37135162460
Option 4 ID : 37135162458
Status : Answered
Chosen Option : 3

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Q.50 The parametric equations of the line passing through A (3,4,−7), B (1,−1,6) are

Ans ✔ 1.

$$x = 3 - 2\lambda, \quad y = 4 - 5\lambda, \quad z = -7 + 13\lambda$$

✘ 2.

$$x = -2 + 5\lambda, \; y = -5 + 4\lambda, \; z = 13 - 7\lambda$$

✘ 3.

$$x = 1 + 3\lambda, \quad y = -1 + 4\lambda, \; z = 6 - 7\lambda$$

✘ 4.

$$x = 3 + \lambda, \quad y = -1 + 4\lambda, \; z = -7 + 6\lambda$$

Question Type : **MCQ**
Question ID : **37135115605**
Option 1 ID : **37135162419**
Option 2 ID : **37135162420**
Option 3 ID : **37135162417**
Option 4 ID : **37135162418**
Status : **Answered**
Chosen Option : **1**

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