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State Common Entrance Test Cell,
Maharashtra State

# MHT CET 2020 Question Paper

PCM

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Q.1

A thin, uniform metal rod of mass 'M' and length 'L' is swinging about a horizontal axis passing through its end. Its maximum angular velocity is '$\omega$'. Its centre of mass rises to a maximum height of

(g = acceleration due to gravity)

Ans

✔ 1. $\frac{L^2\omega^2}{6g}$

✘ 2. $\frac{L^2\omega^2}{g}$

✘ 3. $\frac{L^2\omega^2}{2g}$

✘ 4. $\frac{L^2\omega^2}{3g}$

Question Type : **MCQ**
Question ID : **37135116427**
Option 1 ID : **37135165706**
Option 2 ID : **37135165708**
Option 3 ID : **37135165707**
Option 4 ID : **37135165705**
Status : **Answered**
Chosen Option : **1**

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Q.2

A series LCR circuit has R = 200 Ω, L = 663 mH and C = 26·5 μF. The applied alternating voltage has an amplitude of 50 V and a frequency of 60 Hz so that $X_L = 250\ \Omega$ and $X_C = 100\ \Omega$. The peak current is

Ans

1. ✗ 0·33 A

2. ✓ 0·20 A

3. ✗ 0·50 A

4. ✗ 0·25 A

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Question Type : **MCQ**
Question ID : **37135116431**
Option 1 ID : **37135165723**
Option 2 ID : **37135165721**
Option 3 ID : **37135165724**
Option 4 ID : **37135165722**
Status : **Answered**
Chosen Option : **3**

Q.3

Two masses of 1 gram and 4 gram are moving with equal kinetic energy. The ratio of the magnitudes of their momenta is

Ans

1. ✗ 4 : 1

2. ✗ $\sqrt{2} : 1$

3. ✓ 1 : 12

4. ✗ 1 : 16

3

Question Type : **MCQ**
Question ID : **37135116446**
Option 1 ID : **37135165784**
Option 2 ID : **37135165783**
Option 3 ID : **37135165782**
Option 4 ID : **37135165781**
Status : **Answered**
Chosen Option : **4**

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Q.4

If the frequency of incident radiation is kept constant and the experiment is repeated by using incident light of different intensities, then stopping potential ($V_s$)

Ans

✗ 1. increases with increase in intensity.

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✗ 2. decreases with increase in intensity.

✗ 3. depends upon current.

✓ 4. remains same.

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|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116411** |
| Option 1 ID : | **37135165642** |
| Option 2 ID : | **37135165643** |
| Option 3 ID : | **37135165644** |
| Option 4 ID : | **37135165641** |
| Status : | **Answered** |
| Chosen Option : | **4** |

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**Q.5** The electron in hydrogen atom is moving in an orbit of radius 0·53Å. It takes $1{\cdot}571 \times 10^{-16}$ s to complete one revolution. The velocity of electron will be $[\pi = 3{\cdot}142]$

**Ans**

✗ 1. $5{\cdot}3 \times 10^{6} \frac{m}{s}$

✗ 2. $4 \times 10^{6} \frac{m}{s}$

✗ 3. $3 \times 10^{8} \frac{m}{s}$

✓ 4. $2{\cdot}12 \times 10^{6} \frac{m}{s}$

Question Type : **MCQ**
Question ID : **37135116416**
Option 1 ID : **37135165664**
Option 2 ID : **37135165663**
Option 3 ID : **37135165662**
Option 4 ID : **37135165661**
Status : **Answered**
Chosen Option : **4**

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Q.6

A resonance tube completely filled with water has a small hole at the bottom. Length of the tube is 0·8 m. A vibrating tuning fork of frequency 500 Hz is held near the open end of tube. Water is slowly removed from the bottom. The maximum number of resonances heard will be (Neglect end correction. Speed of sound in air = 340 m/s)

Ans

✗ 1. 5

✗ 2. 4

✔ 3. 2

✗ 4. 3

Question Type : **MCQ**
Question ID : **37135116440**
Option 1 ID : **37135165757**
Option 2 ID : **37135165758**
Option 3 ID : **37135165760**
Option 4 ID : **37135165759**
Status : **Answered**
Chosen Option : **2**

Q.7

If '△Q' is the amount of heat supplied to 'n' moles of a diatonic gas at constant pressure, '△U' is the change in internal energy and '△W' is the work done, then △W : △U : △Q is

Ans

✗ 1. 2:3:4

✗ 2. 1:2:3

✔ 3. 2:5:7

✗ 4. 5:7:9

Question Type : **MCQ**
Question ID : **37135116444**
Option 1 ID : **37135165774**
Option 2 ID : **37135165773**
Option 3 ID : **37135165775**
Option 4 ID : **37135165776**
Status : **Answered**
Chosen Option : **3**

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Q.8

The width of depletion layer of a p-n junction diode, when it is (i) forward biased and (ii) reverse biased respectively

Ans

✗ 1. increases and increases.

✗ 2. decreases and decreases.

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✗ 3. increases and decreases.

✓ 4. decreases and increases.

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116422** |
| Option 1 ID : | **37135165687** |
| Option 2 ID : | **37135165688** |
| Option 3 ID : | **37135165686** |
| Option 4 ID : | **37135165685** |
| Status : | **Answered** |
| Chosen Option : | **3** |

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Q.9

The relative angular speed of hour hand and second hand of a clock is

Ans

1. $\frac{359\pi}{21600}$

2. $\frac{719\pi}{21600}$

3. $\frac{11\pi}{21600}$

4. $\frac{9\pi}{21600}$

Question Type : **MCQ**
Question ID : **37135116437**
Option 1 ID : **37135165748**
Option 2 ID : **37135165746**
Option 3 ID : **37135165747**
Option 4 ID : **37135165745**
Status : **Answered**
Chosen Option : **2**

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Q.10 Water rises to height 2·2 cm in glass capillary tube. The height to which same water rises in another capillary having $\frac{1}{4}^{th}$ area of cross-section is

Ans

1. 16·4 cm
2. 4·4 cm
3. 8·4 cm
4. 2·2 cm

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Question Type : **MCQ**
Question ID : **37135116421**
Option 1 ID : **37135165683**
Option 2 ID : **37135165681**
Option 3 ID : **37135165682**
Option 4 ID : **37135165684**
Status : **Answered**
Chosen Option : **2**

Q.11 In hydrogen spectrum, which of the following spectral series lies in ultraviolet region?

Ans

1. Pfund
2. Lyman
3. Paschen
4. Brackett

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Question Type : **MCQ**
Question ID : **37135116406**
Option 1 ID : **37135165624**
Option 2 ID : **37135165621**
Option 3 ID : **37135165622**
Option 4 ID : **37135165623**
Status : **Answered**
Chosen Option : **2**

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Q.12 If $\vec{A} = \hat{i} + 12\hat{j} + \hat{k}$ and $\vec{B} = 2\hat{i} - a\hat{j} + \hat{k}$ are perpendicular to each other, then what will be the value of 'a' ?

Ans

1. $0{\cdot}5$

2. $-0{\cdot}5$

3. $1$

4. $-1$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116423** |
| Option 1 ID : | **37135165691** |
| Option 2 ID : | **37135165692** |
| Option 3 ID : | **37135165689** |
| Option 4 ID : | **37135165690** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.13 For any two vectors $\vec{A}$ and $\vec{B}$ if $\vec{A} \cdot \vec{B} = |\vec{A} \times \vec{B}|$, the magnitude of $(\vec{A} + \vec{B})$ is $\left(\tan\frac{\pi}{4} = 1, \cos\frac{\pi}{4} = \frac{1}{\sqrt{2}}\right)$

Ans

✔ 1. $\sqrt{A^2 + B^2 + \sqrt{2}\,AB}$

✘ 2. $\sqrt{A^2 + B^2 + \frac{AB}{\sqrt{2}}}$

✘ 3. $A + B$

✘ 4. $\sqrt{A^2 + B^2}$

Question Type : **MCQ**
Question ID : **37135116443**
Option 1 ID : **37135165771**
Option 2 ID : **37135165772**
Option 3 ID : **37135165769**
Option 4 ID : **37135165770**
Status : **Answered**
Chosen Option : **1**

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**Q.14** A particle performs S.H.M. Its potential energies are '$U_1$' and '$U_2$' at displacements '$x_1$' and '$x_2$' respectively. At displacement $(x_1 + x_2)$, its potential energy 'U' is

**Ans**

1. ✔ $\sqrt{U} = \sqrt{U_1} + \sqrt{U_2}$

2. ✘ $\sqrt{U} = (\sqrt{U_1} + \sqrt{U_2})^2$

3. ✘ $\sqrt{U} = \sqrt{U_1} - \sqrt{U_2}$

4. ✘ $\sqrt{U} = (\sqrt{U_1} - \sqrt{U_2})^2$

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Question Type : **MCQ**
Question ID : **37135116435**
Option 1 ID : **37135165739**
Option 2 ID : **37135165738**
Option 3 ID : **37135165737**
Option 4 ID : **37135165740**
Status : **Answered**
Chosen Option : **2**

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**Q.15** The equation of vibration of a stretched string fixed at both ends and vibrating in 5th harmonic is $Y = 3 \sin(0{\cdot}4x) \cos(200\pi t)$ where 'x' and 'Y' are in cm and t in second. Length of the string is

**Ans**

✗ 1. $(10{\cdot}5)\,\pi$ cm

✗ 2. $(8{\cdot}5)\,\pi$ cm

✓ 3. $(12{\cdot}5)\,\pi$ cm

✗ 4. $(4{\cdot}5)\,\pi$ cm

8.

Question Type : **MCQ**
Question ID : **37135116410**
Option 1 ID : **37135165639**
Option 2 ID : **37135165638**
Option 3 ID : **37135165640**
Option 4 ID : **37135165637**
Status : **Answered**
Chosen Option : **3**

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**Q.16** The acceleration due to gravity on moon is $\left(\frac{1}{6}\right)^{th}$ times the acceleration due to gravity on earth. If the ratio of the density of earth '$\varrho_e$' to the density of moon '$\varrho_m$' is $\frac{5}{3}$, then the radius of moon '$R_m$' in terms of the radius of earth '$R_e$' is

**Ans**

✗ 1. $\left(\frac{7}{6}\right) R_e$

✗ 2. $\left(\frac{3}{18}\right) R_e$

✓ 3. $\left(\frac{5}{18}\right) R_e$

✗ 4. $\left(\frac{1}{2\sqrt{3}}\right) R_e$

2

Question Type : **MCQ**
Question ID : **37135116449**
Option 1 ID : **37135165794**
Option 2 ID : **37135165795**
Option 3 ID : **37135165793**
Option 4 ID : **37135165796**
Status : **Answered**
Chosen Option : **3**

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Q.17 The length of potentiometer wire is 4m and is connected in series with an accumulator. The e.m.f. (Unknown) of a cell balances against 1·5 m length of wire. If the length of potentiometer wire is doubled, then the new balancing length of wire will be

Ans

1. 4·5 m

2. 1·5 m

3. 0·75 m

4. 3 m

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Question Type : **MCQ**
Question ID : **37135116420**
Option 1 ID : **37135165680**
Option 2 ID : **37135165677**
Option 3 ID : **37135165678**
Option 4 ID : **37135165679**
Status : **Answered**
Chosen Option : **4**

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Q.18 A transverse wave is travelling with velocity 'V' through a metal wire of length 'L' and density '$\rho$'. The tensile stress in the wire is

Ans

1. $V\rho^2$

2. $\frac{V^2}{\rho}$

3. $\frac{\rho}{V^2}$

4. $V^2\rho$

5

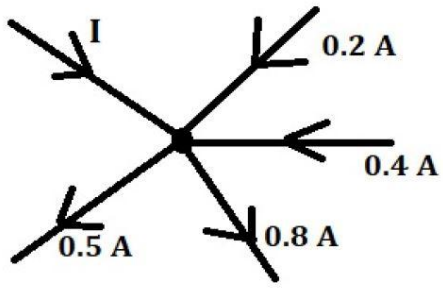
Question Type : **MCQ**
Question ID : **37135116430**
Option 1 ID : **37135165718**
Option 2 ID : **37135165719**
Option 3 ID : **37135165720**
Option 4 ID : **37135165717**
Status : **Answered**
Chosen Option : **4**

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Q.19

The value of current (I) in the given current distribution is




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Ans

✔ 1. 0·7 A

✘ 2. 0·4 A

✘ 3. 0·6 A

✘ 4. 0·5 A

Question Type : **MCQ**
Question ID : **37135116429**
Option 1 ID : **37135165713**
Option 2 ID : **37135165716**
Option 3 ID : **37135165714**
Option 4 ID : **37135165715**
Status : **Answered**
Chosen Option : **1**

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**Q.20** In common emitter mode of transistor, the d.c. current gain is 20, the emitter current is 7 mA. The collector current is

**Ans**

1. ✗ 16/3 mA

2. ✗ 13/3 mA

3. ✗ 8/3 mA

4. ✓ 20/3 mA

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|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116434** |
| Option 1 ID : | **37135165734** |
| Option 2 ID : | **37135165735** |
| Option 3 ID : | **37135165736** |
| Option 4 ID : | **37135165733** |
| Status : | **Answered** |
| Chosen Option : | **3** |

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**Q.21** In experiment of photoelectric effect, the stopping potential for a given metal is '$V_0$' volt, when radiation of wavelength '$\lambda_0$' is used. If radiation of wavelength '$2\lambda_0$' is used for the same metal, then the stopping potential (in volt) will be [ e = charge on electron, c = speed of light, h = Planck's constant.]

**Ans**

1. $V_0 + \frac{hc}{2e\lambda_0}$



2. $V_0 - \frac{hc}{2e\lambda_0}$

3. $\frac{V_0}{2}$

4. $2V_0$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116424** |
| Option 1 ID : | **37135165695** |
| Option 2 ID : | **37135165696** |
| Option 3 ID : | **37135165693** |
| Option 4 ID : | **37135165694** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.22

A metal sphere of mass 'm' and density '$\sigma_1$' falls with terminal velocity through a container containing liquid. The density of liquid is '$\sigma_2$'. The viscous force acting on the sphere is

Ans

✗ 1. $mg\left(1-\frac{\sigma_1}{\sigma_2}\right)$

✓ 2. $mg\left(1-\frac{\sigma_2'}{\sigma_1}\right)$

✗ 3. $mg\left(1+\frac{\sigma_1}{\sigma_2}\right)$

✗ 4. $mg\left(1+\frac{\sigma_2}{\sigma_1}\right)$

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Question Type : **MCQ**
Question ID : **37135116433**
Option 1 ID : **37135165732**
Option 2 ID : **37135165731**
Option 3 ID : **37135165730**
Option 4 ID : **37135165729**
Status : **Answered**
Chosen Option : **2**

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Q.23

The quantity $\frac{PV}{KT}$ represents (K = Boltzmann constant)

Ans

✗ 1. number of moles of gas.

✗ 2. kinetic energy of gas

✗ 3. mass of the gas

✓ 4. number of molecules of gas in one mole.

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Question Type : **MCQ**
Question ID : **37135116418**
Option 1 ID : **37135165670**
Option 2 ID : **37135165671**
Option 3 ID : **37135165669**
Option 4 ID : **37135165672**
Status : **Answered**
Chosen Option : **1**

Q.24

The sensitivity of moving coil galvanometer is inversely proportional to

Ans

✗ 1. current it measures.

✗ 2. number of turns in the coil.

✗ 3. magnetic induction of horse shoe magnet.

✓ 4. twist constant of phosphor bronze wire.

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Question Type : **MCQ**
Question ID : **37135116409**
Option 1 ID : **37135165635**
Option 2 ID : **37135165636**
Option 3 ID : **37135165633**
Option 4 ID : **37135165634**
Status : **Answered**
Chosen Option : **4**

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Q.25 In a biprism experiment, the slit separation is 1 mm. Using monochromatic light of wavelength 5000Å, an interference pattern is obtained on the screen. Where should the screen be moved, so that the change in fringe width is $12{\cdot}5 \times 10^{-5}$ m?

Ans

1. Away or towards the slit by 25 am

2. Away or towards the slit by 12·5 cm

3. Away from the slit by 5 cm

4. Towards the slit by 10 cm

Question Type : **MCQ**
Question ID : **37135116414**
Option 1 ID : **37135165655**
Option 2 ID : **37135165656**
Option 3 ID : **37135165653**
Option 4 ID : **37135165654**
Status : **Answered**
Chosen Option : **1**

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Q.26

Force $F = P \cos(Ax) + Q \sin(Bt)$ where x and t are displacement and time respectively. Which one of the following physical quantity has the dimensions of $\left[\frac{B}{A}\right]$?

Ans

1. velocity gradient

2. velocity

3. angular velocity

4. angular momentum

Question Type : **MCQ**
Question ID : **37135116403**
Option 1 ID : **37135165612**
Option 2 ID : **37135165609**
Option 3 ID : **37135165610**
Option 4 ID : **37135165611**
Status : **Answered**
Chosen Option : **2**

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**Q.27** A train has to negotiate a curve of radius 'r' m, the distance between the rails is '$\ell$' m and outer rail is raised above inner rail by distance of 'h' m. If the angle of banking is small, the safety speed limit on this banked road is

**Ans**

✔ 1. $\sqrt{rg\left(\frac{h}{\ell}\right)}$

✘ 2. $rg\frac{h}{\ell}$

✘ 3. $\frac{\left(\frac{h}{\ell}\right)^2}{rg}$

✘ 4. $\left(rg\frac{h}{\ell}\right)^2$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116415** |
| Option 1 ID : | **37135165658** |
| Option 2 ID : | **37135165657** |
| Option 3 ID : | **37135165660** |
| Option 4 ID : | **37135165659** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.28

A parallel plate capacitor has uniform electric field 'E' in the space between the plates. If the distance between plates is 'd' and area of each plate is 'A', the energy stored in the capacitor is ($\epsilon_0$ = permittivity of free space)

Ans

1. $\frac{1}{2}\frac{\epsilon_0 EA}{d}$

2. $\frac{1}{2}\epsilon_0 E^2 Ad$

3. $\frac{1}{2}\frac{\epsilon_0 Ad}{E^2}$

4. $\frac{1}{2}\frac{\epsilon_0 E^2 A}{d}$

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Question Type : **MCQ**
Question ID : **37135116436**
Option 1 ID : **37135165741**
Option 2 ID : **37135165743**
Option 3 ID : **37135165744**
Option 4 ID : **37135165742**
Status : **Answered**
Chosen Option : **2**

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**Q.29**

A capacitor of unknown capacitance C is connected across a battery of V volt. The charge stored in it becomes Q coulomb. When potential across the capacitor is reduced by V′ volt, the charge stored in it becomes Q′coulomb. The capacitance C is

**Ans**

✗ 1. $\frac{Q-Q'}{\sqrt{V'}}$

12

✗ 2. $\frac{V'}{Q-Q'}$

✗ 3. $\frac{Q+Q'}{V'}$

✓ 4. $\frac{Q-Q'}{V'}$

Question Type : **MCQ**
Question ID : **37135116404**
Option 1 ID : **37135165616**
Option 2 ID : **37135165615**
Option 3 ID : **37135165614**
Option 4 ID : **37135165613**
Status : **Answered**
Chosen Option : **4**

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Q.30

In a sphere of influence, the liquid molecule at its centre is

Ans

✔ 1.

attracted by other molecules in the sphere of influence.

✘ 2.

repelled by other molecules lying outside the sphere of influence.

✘ 3.

attracted by other molecules lying outside the sphere of influence.

✘ 4.

repelled by other molecules in the sphere of influence.

6

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116417** |
| Option 1 ID : | **37135165665** |
| Option 2 ID : | **37135165667** |
| Option 3 ID : | **37135165666** |
| Option 4 ID : | **37135165668** |
| Status : | **Answered** |
| Chosen Option : | **4** |

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**Q.31**

A rubber ball be taken in a deep sea so that its volume is decreased by x%. The bulk modulus of rubber is 'K' and density of sea water is '$\varrho$'. The depth to which a rubber ball is taken is proportional to (g = acceleration due to gravity)

**Ans**

✗ 1. $\frac{\varrho x}{Kg}$

✓ 2. $\frac{Kx}{\varrho g}$

✗ 3. $\frac{\varrho g}{Kx}$

✗ 4. $\frac{\varrho}{Kxg}$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116432** |
| Option 1 ID : | **37135165727** |
| Option 2 ID : | **37135165728** |
| Option 3 ID : | **37135165725** |
| Option 4 ID : | **37135165726** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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**Q.32** A circular arc of radius 'r' carrying current 'I' subtends on angle $\frac{\pi}{16}$ at its centre.

The radius of a metal wire is uniform. The magnetic induction at the centre of circular arc is

**Ans**

✗ 1. $\frac{\mu_0 I}{16r}$

✗ 2. $\frac{\mu_0 I}{32r}$

✓ 3. $\frac{\mu_0 I}{64r}$

✗ 4. $\frac{\mu_0 I}{8r}$

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Question Type : **MCQ**
Question ID : **37135116413**
Option 1 ID : **37135165651**
Option 2 ID : **37135165650**
Option 3 ID : **37135165649**
Option 4 ID : **37135165652**
Status : **Answered**
Chosen Option : **2**

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**Q.33** The speed of a wave in a certain medium is 960 m/s. If 900 waves pass over a certain point of the medium in half a minute, the wavelength of the wave is

**Ans**

1. ✗ 16 m
2. ✓ 32 m
3. ✗ 9 m
4. ✗ 18 m

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| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116425** |
| Option 1 ID : | **37135165698** |
| Option 2 ID : | **37135165700** |
| Option 3 ID : | **37135165697** |
| Option 4 ID : | **37135165699** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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**Q.34** A convex lens of focal length 'F' produces a real image 'n' times the size of the object. The image distance is

**Ans**

1. ✔ $F\,(n+1)$

2. ✗ $F\,(n-1)$

3. ✗ $\frac{F}{(n+1)}$

4. ✗ $\frac{F}{(n-1)}$

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| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116401** |
| Option 1 ID : | **37135165601** |
| Option 2 ID : | **37135165602** |
| Option 3 ID : | **37135165603** |
| Option 4 ID : | **37135165604** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.35

Two rings of same mass 'M' and radius 'R' are so placed that their centre is common and their planes are perpendicular to each other. The moment of inertia of the system about an axis passing through the centre and perpendicular to any one ring is

Ans

✔ 1. $\frac{3MR^2}{2}$

✘ 2. $\frac{MR^2}{2}$

✘ 3. $\frac{2MR^2}{3}$

✘ 4. $MR^2$

3

Question Type : **MCQ**
Question ID : **37135116442**
Option 1 ID : **37135165767**
Option 2 ID : **37135165766**
Option 3 ID : **37135165768**
Option 4 ID : **37135165765**
Status : **Answered**
Chosen Option : **1**

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**Q.36** In LCR circuit the inductance is changed from L to 9L. For same resonant frequency the capacitance should be changed from C to

**Ans**

✗ 1. $9C$

✗ 2. $3C$

✓ 3. $\frac{C}{9}$

✗ 4. $\frac{C}{3}$

16

Question Type : **MCQ**
Question ID : **37135116448**
Option 1 ID : **37135165792**
Option 2 ID : **37135165791**
Option 3 ID : **37135165789**
Option 4 ID : **37135165790**
Status : **Answered**
Chosen Option : **3**

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Q.37 An object is immersed in a fluid of refractive index 'μ'. In order that the object becomes invisible when observed from outside, it should

Ans

✗ 1. have refractive index equal to one.

✓ 2. have refractive index same as surrounding fluid, that is 'μ'.

✗ 3. absorb all light falling on it.

✗ 4. behave as a perfect reflector.

25

Question Type : **MCQ**
Question ID : **37135116447**
Option 1 ID : **37135165787**
Option 2 ID : **37135165788**
Option 3 ID : **37135165786**
Option 4 ID : **37135165785**
Status : **Answered**
Chosen Option : **1**

Q.38 How much energy is imparted to an electron so that its de-Broglie wavelength reduces from $10^{-10}$ m to $0{\cdot}5 \times 10^{-10}$ m? (E = energy of electron)

Ans

✗ 1. 4E

✗ 2. 2E

✓ 3. 3E

✗ 4. E

18

Question Type : **MCQ**
Question ID : **37135116441**
Option 1 ID : **37135165764**
Option 2 ID : **37135165762**
Option 3 ID : **37135165763**
Option 4 ID : **37135165761**
Status : **Answered**
Chosen Option : **1**

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**Q.39** A horizontal spring executes S.H.M. with amplitude '$A_1$', when mass '$m_1$' is attached to it. When it passes through mean position another mass '$m_2$' is placed on it. Both masses move together with amplitude '$A_2$'. Therefore $A_2 : A_1$ is

**Ans**

✗ 1. $\left[\frac{m_2}{m_1+m_2}\right]^{1/2}$

✗ 2. $\left[\frac{m_1+m_2}{m_1}\right]^{1/2}$

✓ 3. $\left[\frac{m_1}{m_1+m_2}\right]^{1/2}$

✗ 4. $\left[\frac{m_1+m_2}{m_2}\right]^{1/2}$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116405** |
| Option 1 ID : | **37135165617** |
| Option 2 ID : | **37135165620** |
| Option 3 ID : | **37135165618** |
| Option 4 ID : | **37135165619** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.40 According to Abbe, in the formula for resolving power of microscope, the numerical aperture is represented by

Ans

1. $\frac{2\mu \sin \alpha}{\lambda}$

2. $\frac{2 \sin \alpha}{\mu\lambda}$

3. $\mu \sin \alpha$

4. $\frac{\lambda}{2\mu \sin \alpha}$

26

Question Type : **MCQ**
Question ID : **37135116426**
Option 1 ID : **37135165702**
Option 2 ID : **37135165703**
Option 3 ID : **37135165701**
Option 4 ID : **37135165704**
Status : **Answered**
Chosen Option : **1**

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Q.41

A steel wire of length 'L' and area of cross-section 'A' is suspended from rigid support. If 'Y' is the Young's modulus of material of the wire and 'α' is the coefficient of linear expansion, then the increase in tension when temperature falls by t° C is

Ans

1. $\frac{YA}{\alpha t}$

2. $YA\alpha t$

3. $Y\alpha t$

4. $\frac{L\alpha t}{Y}$

Question Type : **MCQ**
Question ID : **37135116412**
Option 1 ID : **37135165645**
Option 2 ID : **37135165648**
Option 3 ID : **37135165647**
Option 4 ID : **37135165646**
Status : **Answered**
Chosen Option : **2**

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Q.42

The materials having negative magnetic susceptibility are

Ans

1. paramagnetic.

2. diamagnetic.

3. ferromagnetic.

4. both paramagnetic and ferromagnetic.

15

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116445** |
| Option 1 ID : | **37135165778** |
| Option 2 ID : | **37135165779** |
| Option 3 ID : | **37135165780** |
| Option 4 ID : | **37135165777** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.43

A wire of magnetic material of length '2L' and magnetic moment 'M' is bent at the centre to form 'L' shaped wire. Its magnetic moment is

Ans

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

2. $M$

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

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

Question Type : **MCQ**
Question ID : **37135116408**
Option 1 ID : **37135165631**
Option 2 ID : **37135165629**
Option 3 ID : **37135165632**
Option 4 ID : **37135165630**
Status : **Answered**
Chosen Option : **2**

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Q.44

The linear displacement 'x' of the bob of simple pendulum from its mean position varies as $x = a \sin\left(\frac{\pi}{\sqrt{2}} t\right)$ where 'a' is its amplitude expressed in metre and 't' is in second. The length of simple pendulum is (Take '$g' = \pi^2$ m/s$^2$)

Ans

1. ✗ 1·5 m

2. ✗ 3·0 m

3. ✓ 2·0 m

4. ✗ 2·5 m

Question Type : **MCQ**
Question ID : **37135116419**
Option 1 ID : **37135165676**
Option 2 ID : **37135165673**
Option 3 ID : **37135165675**
Option 4 ID : **37135165674**
Status : **Answered**
Chosen Option : **3**

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**Q.45**

Let '$\mu_1$' and '$\mu_2$' be the refractive indices of two media. '$v_1$' and '$v_2$' are the velocities of light in the media respectively.

Which one of the following relations is TRUE?

**Ans**

✔ 1. $\mu_1 v_1 = \mu_2 v_2$

✘ 2. $\mu_2 v_1 = \mu_1 v_2$

✘ 3. $\mu_1 v_1^2 = \mu_2 v_2^2$

✘ 4. $\mu_2^2 v_1 = \mu_1^2 v_2$

25

Question Type : **MCQ**
Question ID : **37135116428**
Option 1 ID : **37135165712**
Option 2 ID : **37135165710**
Option 3 ID : **37135165709**
Option 4 ID : **37135165711**
Status : **Answered**
Chosen Option : **1**

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**Q.46** A toroid has a non-ferromagnetic wire of inner radius '$r_1$' and outer radius '$r_2$', around which 'N' turns of wire are wound. If the current in the wire is 'I', then the magnetic field inside the toroid is ( $\mu_0$= permeability of free space )

**Ans**

✔ 1. $\frac{\mu_0 NI}{\pi(r_1+r_2)}$

✘ 2. $\frac{\mu_0 NI}{(r_2-r_1)}$

✘ 3. $\frac{\mu_0 NI}{(r_1+r_2)}$

✘ 4. $\frac{\mu_0 NI}{\pi(r_2-r_1)}$

14

Question Type : **MCQ**
Question ID : **37135116439**
Option 1 ID : **37135165753**
Option 2 ID : **37135165756**
Option 3 ID : **37135165754**
Option 4 ID : **37135165755**
Status : **Answered**
Chosen Option : **1**

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Q.47 A body of mass 5 kg is moving in a straight line. The relation between its displacement and time is $x = (t^3 - 2t - 10)$ m. What is the force acting on it at the end of 5 second?

Ans

1. ✔ 150 N
2. ✘ 120 N
3. ✘ 80 N
4. ✘ 100 N

23

Question Type : **MCQ**
Question ID : **37135116438**
Option 1 ID : **37135165749**
Option 2 ID : **37135165750**
Option 3 ID : **37135165752**
Option 4 ID : **37135165751**
Status : **Answered**
Chosen Option : **1**

Q.48 The length of seconds pendulum is 1m on the earth. If the mass and diameter of the planet is double than that of the earth, then the length of the seconds pendulum on the planet will be

Ans

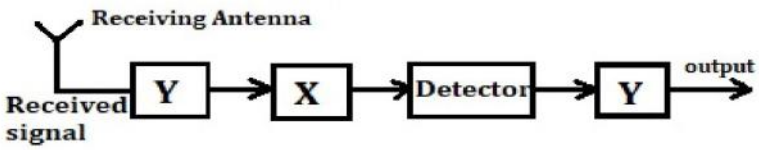
1. ✘ 0·2 m
2. ✘ 0·4 m
3. ✘ 0·3 m
4. ✔ 0·5 m

4

Question Type : **MCQ**
Question ID : **37135116407**
Option 1 ID : **37135165628**
Option 2 ID : **37135165626**
Option 3 ID : **37135165627**
Option 4 ID : **37135165625**
Status : **Answered**
Chosen Option : **1**

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Q.49 In communication system, for a given block diagram of receiver, the boxes 'X' and 'Y' respectively represent




Ans

1. Detector and amplifier

2. IF stage and amplifier

3. IF stage and detector

4. Amplifier and IF stage

Question Type : **MCQ**
Question ID : **37135116402**
Option 1 ID : **37135165607**
Option 2 ID : **37135165605**
Option 3 ID : **37135165608**
Option 4 ID : **37135165606**
Status : **Answered**
Chosen Option : **2**

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Q.50

A torque of 50 Nm acts on a body for 8 second which is initially at rest. The change in its angular momentum is

Ans

✔ 1. $400\ kgm^2/s$

✗ 2. $600\ kgm^2/s$

✗ 3. $1000\ kgm^2/s$

✗ 4. $800\ kgm^2/s$



Question Type : **MCQ**
Question ID : **37135116450**
Option 1 ID : **37135165797**
Option 2 ID : **37135165798**
Option 3 ID : **37135165800**
Option 4 ID : **37135165799**
Status : **Answered**
Chosen Option : **1**

Section : **Chemistry**

Q.1

Which from following elements has lowest tendency to form it's oxide ?

Ans

✗ 1. Al

✗ 2. Fe

✗ 3. Cr

✔ 4. Hg

Question Type : **MCQ**
Question ID : **37135116464**
Option 1 ID : **37135165856**
Option 2 ID : **37135165854**
Option 3 ID : **37135165853**
Option 4 ID : **37135165855**
Status : **Answered**
Chosen Option : **4**

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Q.2 Which of the following amines can not be prepared by Gabriel phthalimide synthesis?

Ans

✗ 1. Ethylamine

✗ 2. Sec-butylamine

✓ 3. Aniline

✗ 4. Isopropylamine

Question Type : **MCQ**
Question ID : **37135116497**
Option 1 ID : **37135165985**
Option 2 ID : **37135165988**
Option 3 ID : **37135165987**
Option 4 ID : **37135165986**
Status : **Answered**
Chosen Option : **2**

Q.3 Which ligand among the following has highest splitting power of d-orbitals of central metal ion?

Ans

✗ 1. $S^{2-}$

✗ 2. $OH^-$

✗ 3. NCS

✓ 4. CO

Question Type : **MCQ**
Question ID : **37135116493**
Option 1 ID : **37135165972**
Option 2 ID : **37135165971**
Option 3 ID : **37135165970**
Option 4 ID : **37135165969**
Status : **Answered**
Chosen Option : **1**

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Q.4

Which of the following is NOT an antacid?

Ans

✗ 1. $Al(OH)_3$

✗ 2. $Mg(OH)_2$

✓ 3. $Na_2CO_3$

✗ 4. $NaHCO_3$

Question Type : **MCQ**
Question ID : **37135116468**
Option 1 ID : **37135165872**
Option 2 ID : **37135165870**
Option 3 ID : **37135165871**
Option 4 ID : **37135165869**
Status : **Answered**
Chosen Option : **3**

Q.5

What is the quantity of glucose obtained when 68·4 g of sucrose is hydrolyzed in laboratory under ideal condition ? (molar mass of sucrose =342 g $mol^{-1}$)

Ans

✗ 1. 198·0 g

✗ 2. 180 g

✗ 3. 68·4 g

✓ 4. 36·0 g

Question Type : **MCQ**
Question ID : **37135116465**
Option 1 ID : **37135165860**
Option 2 ID : **37135165857**
Option 3 ID : **37135165858**
Option 4 ID : **37135165859**
Status : **Answered**
Chosen Option : **3**

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Q.6 What is the relation between cell constant, conductivity and electrical resistance?

Ans

✗ 1. $k = \frac{R}{b}$

✓ 2. $k = \frac{b}{R}$

✗ 3. $k = \frac{1}{R.b}$

✗ 4. $k = R.b$

Question Type : **MCQ**
Question ID : **37135116453**
Option 1 ID : **37135165810**
Option 2 ID : **37135165809**
Option 3 ID : **37135165812**
Option 4 ID : **37135165811**
Status : **Answered**
Chosen Option : **2**

Q.7 An element crystallises in bcc type crystal structure with edge length of unit cell 300 pm. Calculate radius of element ?

Ans

✗ 1. $2{\cdot}299 \times 10^{-8}\text{cm}$

✓ 2. $1{\cdot}299 \times 10^{-8}\text{cm}$

✗ 3. $6{\cdot}920 \times 10^{-8}\text{cm}$

✗ 4. $1{\cdot}440 \times 10^{-8}\text{cm}$

Question Type : **MCQ**
Question ID : **37135116456**
Option 1 ID : **37135165822**
Option 2 ID : **37135165821**
Option 3 ID : **37135165823**
Option 4 ID : **37135165824**
Status : **Answered**
Chosen Option : **2**

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Q.8 Which among the following is used as a source of oxygen in submarine in emergency breathing apparatus ?

Ans

✔ 1. potassium superoxide

✘ 2. sodium peroxide

✘ 3. rubidium superoxide

✘ 4. lithium monoxide

Question Type : **MCQ**
Question ID : **37135116462**
Option 1 ID : **37135165847**
Option 2 ID : **37135165848**
Option 3 ID : **37135165845**
Option 4 ID : **37135165846**
Status : **Answered**
Chosen Option : **3**

Q.9 What type of hybridization is present in $PCl_5$ molecule ?

Ans

✘ 1. $sp^2$ hybridization

✘ 2. $sp^3$ hybridization

✔ 3. $sp^3 d$ hybridization

✘ 4. $sp^3 d^2$ hybridization

Question Type : **MCQ**
Question ID : **37135116482**
Option 1 ID : **37135165926**
Option 2 ID : **37135165925**
Option 3 ID : **37135165927**
Option 4 ID : **37135165928**
Status : **Answered**
Chosen Option : **3**

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Q.10 Which among the following polymers belongs to the class elastomers?

Ans

✗ 1. Polystyrene

✗ 2. Nylon

✓ 3. Neoprene

✗ 4. Bakelite

Question Type : **MCQ**
Question ID : **37135116485**
Option 1 ID : **37135165937**
Option 2 ID : **37135165940**
Option 3 ID : **37135165939**
Option 4 ID : **37135165938**
Status : **Answered**
Chosen Option : **3**

Q.11 Sodium crystallises in bcc structure with radius $1{\cdot}86 \times 10^{-8}$ cm. Calculate the edge length of unit cell ?

Ans

✓ 1. $4{\cdot}29 \times 10^{-8}$ cm

✗ 2. $6{\cdot}20 \times 10^{-8}$ cm

✗ 3. $8{\cdot}05 \times 10^{-8}$ cm

✗ 4. $3{\cdot}72 \times 10^{-8}$cm

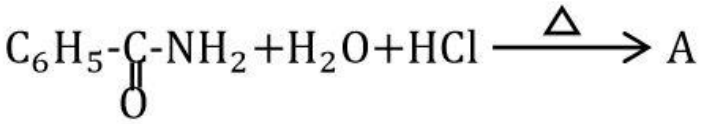
Question Type : **MCQ**
Question ID : **37135116480**
Option 1 ID : **37135165917**
Option 2 ID : **37135165920**
Option 3 ID : **37135165919**
Option 4 ID : **37135165918**
Status : **Answered**
Chosen Option : **1**

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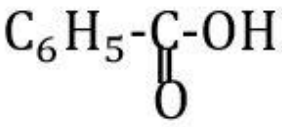
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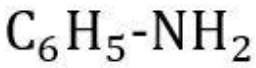
Q.12

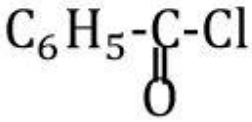
Identify product A in the following reaction.

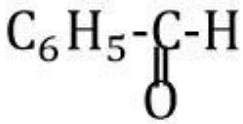


Ans

1. 

2. 

3. 

4. 

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116479** |
| Option 1 ID : | **37135165915** |
| Option 2 ID : | **37135165916** |
| Option 3 ID : | **37135165914** |
| Option 4 ID : | **37135165913** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.13

Which among the following gases liquefy easily ?

Ans

1. oxygen

2. helium

3. chlorine

4. nitrogen

Question Type : **MCQ**
Question ID : **37135116470**
Option 1 ID : **37135165877**
Option 2 ID : **37135165879**
Option 3 ID : **37135165880**
Option 4 ID : **37135165878**
Status : **Marked For Review**
Chosen Option : **2**

Q.14

Which of the following is NOT dicarboxylic acid?

Ans

1. Succinic acid

2. Acrylic acid

3. Malonic acid

4. Phthalic acid

Question Type : **MCQ**
Question ID : **37135116466**
Option 1 ID : **37135165862**
Option 2 ID : **37135165863**
Option 3 ID : **37135165861**
Option 4 ID : **37135165864**
Status : **Marked For Review**
Chosen Option : **2**

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Q.15

Which among the following is an example of Metal – metal ion electrode ?

Ans

✗ 1. $Fe^{3+}_{(aq.)}, Fe^{2+}_{(aq.)} \mid Pt$

✗ 2. $Cl^{-}_{(aq.)} \mid AgCl_{(s)} \mid Ag$

✓ 3. $Zn^{2+}_{(aq.)} \mid Zn_{(s)}$

✗ 4. $OH^{-}_{(aq.)} \mid O_{2(g),PO_2)} \mid Pt$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116495** |
| Option 1 ID : | **37135165978** |
| Option 2 ID : | **37135165977** |
| Option 3 ID : | **37135165979** |
| Option 4 ID : | **37135165980** |
| Status : | **Marked For Review** |
| Chosen Option : | **3** |

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Q.16 What is the type of magnetic behavior and geometry respectively in Cuproammonium sulphate (Atomic no. of Cu = 29) ?

Ans

✗ 1. Paramagnetic and tetrahedral

✗ 2. Diamagnetic and pyramidal

✗ 3. Diamagnetic and tetrahedral

✓ 4. Paramagnetic and square planar

Question Type : **MCQ**
Question ID : **37135116459**
Option 1 ID : **37135165833**
Option 2 ID : **37135165834**
Option 3 ID : **37135165836**
Option 4 ID : **37135165835**
Status : **Answered**
Chosen Option : **2**

Q.17 Which among the following sources contains caryophyllene?

Ans

✗ 1. Peppermint

✗ 2. Oil of roses

✗ 3. Oil of ginger

✓ 4. Oil of cloves

Question Type : **MCQ**
Question ID : **37135116474**
Option 1 ID : **37135165896**
Option 2 ID : **37135165894**
Option 3 ID : **37135165895**
Option 4 ID : **37135165893**
Status : **Answered**
Chosen Option : **4**

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Q.18

Which of following is o-acetylsalicylic acid

Ans

✔ 1. Aspirin

✘ 2. Equanil

✘ 3. Veronal

✘ 4. Valium

Question Type : **MCQ**
Question ID : **37135116461**
Option 1 ID : **37135165844**
Option 2 ID : **37135165842**
Option 3 ID : **37135165841**
Option 4 ID : **37135165843**
Status : **Answered**
Chosen Option : **1**

Q.19

Identify the ionic charge and magnetic nature respectively of manganate ion.

Ans

✘ 1. $-1$, Diamagnetic

✘ 2. $-2$, Diamagnetic

✔ 3. $-2$, Paramagnetic

✘ 4. $-1$, Paramagnetic

Question Type : **MCQ**
Question ID : **37135116490**
Option 1 ID : **37135165959**
Option 2 ID : **37135165957**
Option 3 ID : **37135165958**
Option 4 ID : **37135165960**
Status : **Answered**
Chosen Option : **3**

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Q.20

Which of the following hydride is deficient in hydrogen ?

Ans

1. $LiH$

2. $KH$

3. $NiH$

4. $NaH$

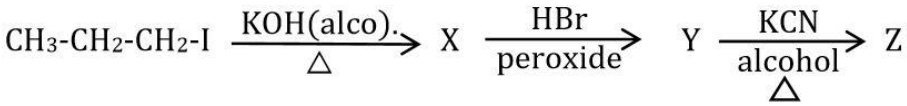
| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116457** |
| Option 1 ID : | **37135165826** |
| Option 2 ID : | **37135165825** |
| Option 3 ID : | **37135165828** |
| Option 4 ID : | **37135165827** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.21

Identify Z in the following series of reactions:




Ans

1. $CH_3\text{-}CH_2\text{-}CH_2\text{-}CN$

2. $CH_3\text{-}CH_2\text{-}CH_2\text{-}Br$

3. $CH_3\text{-}\underset{\underset{CN}{|}}{CH}\text{-}CH_3$

4. $CH_3\text{-}CH{=}\ CH_2$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116478** |
| Option 1 ID : | **37135165912** |
| Option 2 ID : | **37135165911** |
| Option 3 ID : | **37135165910** |
| Option 4 ID : | **37135165909** |
| Status : | **Answered** |
| Chosen Option : | **3** |

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Q.22

Solution of chloroform in nitrogen is an example of

Ans

✔ 1. liquid in gas

✘ 2. liquid in solid

✘ 3. liquid in liquid

✘ 4. gas in liquid

Question Type : **MCQ**
Question ID : **37135116488**
Option 1 ID : **37135165950**
Option 2 ID : **37135165951**
Option 3 ID : **37135165949**
Option 4 ID : **37135165952**
Status : **Answered**
Chosen Option : **1**

Q.23

When phenol reacts with dilute nitric acid at room temperature, the major product obtained is

Ans

✘ 1. p- nitrophenol

✘ 2. m- nitrophenol

✘ 3. 2,4,6-trinitrophenol

✔ 4. o- nitrophenol

Question Type : **MCQ**
Question ID : **37135116472**
Option 1 ID : **37135165887**
Option 2 ID : **37135165886**
Option 3 ID : **37135165888**
Option 4 ID : **37135165885**
Status : **Answered**
Chosen Option : **4**

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Q.24

Identify the name of reaction in which alkyl fluorides are prepared by heating alkyl bromide with metallic fluorides ?

Ans

1. Sandmeyer reaction

2. Wurtz reaction

3. Swarts reaction

4. Finkelstein reaction

Question Type : **MCQ**
Question ID : **37135116500**
Option 1 ID : **37135166000**
Option 2 ID : **37135165997**
Option 3 ID : **37135165998**
Option 4 ID : **37135165999**
Status : **Answered**
Chosen Option : **3**

Q.25

Identify correct decreasing order of oxidizing power?

Ans

1. $HClO > HClO_2 > HClO_3$

2. $HClO > HClO_3 > HClO_2$

3. $HClO_2 > HClO > HClO_3$

4. $HClO_2 > HClO_3 > HClO$

Question Type : **MCQ**
Question ID : **37135116451**
Option 1 ID : **37135165801**
Option 2 ID : **37135165802**
Option 3 ID : **37135165804**
Option 4 ID : **37135165803**
Status : **Answered**
Chosen Option : **1**

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Q.26 How many lone pair of electrons are present on chlorine atom in hypochlorous acid?

Ans

1. 1

2. 3

3. 2

4. 4

Question Type : **MCQ**
Question ID : **37135116467**
Option 1 ID : **37135165868**
Option 2 ID : **37135165866**
Option 3 ID : **37135165867**
Option 4 ID : **37135165865**
Status : **Answered**
Chosen Option : **3**

Q.27 Which of the following groups does not show (+R) effect?

Ans

1. $-NH_2$

2. -NHCOR

3. -CN

4. -NR

Question Type : **MCQ**
Question ID : **37135116491**
Option 1 ID : **37135165961**
Option 2 ID : **37135165964**
Option 3 ID : **37135165963**
Option 4 ID : **37135165962**
Status : **Answered**
Chosen Option : **3**

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Q.28 Which of the following is a product of first step and is used as reactant in next step for manufacture of $K_2Cr_2O_7$ from concentrated chromite ore ?

Ans

✗ 1. Sodium dichromate

✗ 2. Potassium chromate

✗ 3. Sodium sulphate

✓ 4. Sodium chromate

Question Type : **MCQ**
Question ID : **37135116460**
Option 1 ID : **37135165839**
Option 2 ID : **37135165838**
Option 3 ID : **37135165840**
Option 4 ID : **37135165837**
Status : **Answered**
Chosen Option : **1**

Q.29 Identify the monomers used in preparation of PHBV polymer.

Ans

✗ 1. Styrene and glycolic acid

✗ 2. Lactic acid and glycolic acid

✓ 3. 3-Hydroxy butanoic acid and 3-hydroxy pentanoic acid

✗ 4. Glycine and ω amino caproic acid

Question Type : **MCQ**
Question ID : **37135116476**
Option 1 ID : **37135165904**
Option 2 ID : **37135165902**
Option 3 ID : **37135165901**
Option 4 ID : **37135165903**
Status : **Answered**
Chosen Option : **3**

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Q.30 What is the oxidation number of Fe in $K_3[Fe(CN)_6]$ ?

Ans

✗ 1. $-6$

✗ 2. $-3$

✓ 3. $+3$

✗ 4. $+6$

Question Type : **MCQ**
Question ID : **37135116498**
Option 1 ID : **37135165989**
Option 2 ID : **37135165991**
Option 3 ID : **37135165992**
Option 4 ID : **37135165990**
Status : **Answered**
Chosen Option : **3**

Q.31 A reaction of phenol with chloroform in presence of sodium hydroxide to form salicylaldehyde is known as

Ans

✓ 1. Reimer – Tiemann reaction

✗ 2. Friedel craft's reaction

✗ 3. Stephens reaction

✗ 4. Kolbe's reaction

Question Type : **MCQ**
Question ID : **37135116483**
Option 1 ID : **37135165930**
Option 2 ID : **37135165931**
Option 3 ID : **37135165932**
Option 4 ID : **37135165929**
Status : **Answered**
Chosen Option : **1**

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Q.32 According to molecular orbital theory, antibonding molecular orbitals of $O_2$ contain

Ans

✔ 1. 4 electrons

✘ 2. 6 electrons

✘ 3. 10 electrons

✘ 4. 8 electrons

Question Type : **MCQ**
Question ID : **37135116494**
Option 1 ID : **37135165976**
Option 2 ID : **37135165973**
Option 3 ID : **37135165975**
Option 4 ID : **37135165974**
Status : **Marked For Review**
Chosen Option : **1**

Q.33 Benzene diazonium chloride on reaction with aniline in mild alkaline medium forms

Ans

✔ 1. yellow dye

✘ 2. blue dye

✘ 3. red dye

✘ 4. orange dye

Question Type : **MCQ**
Question ID : **37135116484**
Option 1 ID : **37135165934**
Option 2 ID : **37135165936**
Option 3 ID : **37135165935**
Option 4 ID : **37135165933**
Status : **Answered**
Chosen Option : **1**

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Q.34 What is the value of $\Delta S_{(total)}$ for following reaction at 300 K

$Fe_2O_{3(s)} + 3CO_{(g)} \longrightarrow 2Fe_{(s)} + 3\,CO_{2(g)}$ $\Delta H° = -25$ kJ, $\Delta S° = 15$ $JK^{-1}$

Ans

1. $68{\cdot}2\ JK^{-1}$
2. $98{\cdot}3\ JK^{-1}$
3. $8{\cdot}32\ JK^{-1}$
4. $-10{\cdot}0\ JK^{-1}$

Question Type : **MCQ**
Question ID : **37135116455**
Option 1 ID : **37135165819**
Option 2 ID : **37135165818**
Option 3 ID : **37135165817**
Option 4 ID : **37135165820**
Status : **Answered**
Chosen Option : **2**

Q.35 Formation of p-hydroxyazobenzene from benzene diazonium chloride and phenol in mild alkaline medium is a

Ans

1. nucleophilic substitution
2. electrophilic addition
3. nucleophilic addition
4. electrophilic substitution

Question Type : **MCQ**
Question ID : **37135116469**
Option 1 ID : **37135165873**
Option 2 ID : **37135165876**
Option 3 ID : **37135165875**
Option 4 ID : **37135165874**
Status : **Answered**
Chosen Option : **1**

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Q.36

What is the unit of rate constant for the zero order reaction?

Ans

✔ 1. $mol\ dm^{-3}t^{-1}$

✘ 2. $mol\ dm^{3}t^{-1}$

✘ 3. $t^{-1}$

✘ 4. $mol\ dm^{-3}t$

Question Type : **MCQ**
Question ID : **37135116473**
Option 1 ID : **37135165890**
Option 2 ID : **37135165892**
Option 3 ID : **37135165889**
Option 4 ID : **37135165891**
Status : **Answered**
Chosen Option : **1**

Q.37

When HCl is treated with propene in presence of sodium peroxide, the major product obtained is

Ans

✘ 1. 1-Chloropropane

✘ 2. 1, 2–dichloropropane

✔ 3. 2-Chloropropane

✘ 4. 2, 2-dichloropropane

Question Type : **MCQ**
Question ID : **37135116499**
Option 1 ID : **37135165993**
Option 2 ID : **37135165995**
Option 3 ID : **37135165994**
Option 4 ID : **37135165996**
Status : **Answered**
Chosen Option : **3**

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Q.38

Tyndall effect is observed due to

Ans

✗ 1.

neutralization of charge on colloidal particles

✗ 2.

Zig-zag motion of colloidal particles

✗ 3.

precipitation of colloidal particles

✓ 4.

Scattering of light by colloidal particles

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116487** |
| Option 1 ID : | **37135165946** |
| Option 2 ID : | **37135165948** |
| Option 3 ID : | **37135165947** |
| Option 4 ID : | **37135165945** |
| Status : | **Answered** |
| Chosen Option : | **4** |

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**Q.39** Which reaction from following occurs at 2000 K in the blast furnace for extraction of iron?

**Ans**

✗ 1. $CaO + SiO_2 \longrightarrow CaSiO_3$

✗ 2. $CaCO_3 \longrightarrow CaO + CO_2$

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

✓ 4. $2C + O_2 \longrightarrow 2CO$

Question Type : **MCQ**
Question ID : **37135116492**
Option 1 ID : **37135165968**
Option 2 ID : **37135165966**
Option 3 ID : **37135165967**
Option 4 ID : **37135165965**
Status : **Answered**
Chosen Option : **2**

**Q.40** How many moles of ethene are required to prepare 6·0 g ethane by hydrogenation process?

**Ans**

✓ 1. 0·2 mole

✗ 2. 0·1 mole

✗ 3. 1·0 mole

✗ 4. 4·0 mole

Question Type : **MCQ**
Question ID : **37135116496**
Option 1 ID : **37135165984**
Option 2 ID : **37135165983**
Option 3 ID : **37135165981**
Option 4 ID : **37135165982**
Status : **Answered**
Chosen Option : **1**

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Q.41

An amalgum of mercury with sodium is an example

Ans

✗ 1. solid in liquid solution

✗ 2. solid in solid solution

✗ 3. liquid in liquid solution

✓ 4. liquid in solid solution

Question Type : **MCQ**
Question ID : **37135116454**
Option 1 ID : **37135165813**
Option 2 ID : **37135165815**
Option 3 ID : **37135165816**
Option 4 ID : **37135165814**
Status : **Answered**
Chosen Option : **4**

Q.42 What is the volume of 1 mole of a crystalline solid having unit cell edge length $16 \times 10^{-8}$ cm, if it's unit cell contains 24 molecules ?

Ans

✓ 1. $102{\cdot}7\ cm^3mol^{-1}$

✗ 2. $404{\cdot}0\ cm^3mol^{-1}$

✗ 3. $159{\cdot}3\ cm^3mol^{-1}$

✗ 4. $142{\cdot}1\ cm^3mol^{-1}$

Question Type : **MCQ**
Question ID : **37135116463**
Option 1 ID : **37135165849**
Option 2 ID : **37135165852**
Option 3 ID : **37135165851**
Option 4 ID : **37135165850**
Status : **Answered**
Chosen Option : **1**

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Q.43 When methoxy benzene react with HI at room temperature the products formed are

Ans

✗ 1. Iodomethane and Iodobenzene

✓ 2. Iodomethane and Phenol

✗ 3. Methanol and Iodobenzene

✗ 4. Iodomethane and Benzene

Question Type : **MCQ**
Question ID : **37135116489**
Option 1 ID : **37135165956**
Option 2 ID : **37135165955**
Option 3 ID : **37135165953**
Option 4 ID : **37135165954**
Status : **Answered**
Chosen Option : **2**

Q.44 Which among the following is an example of zero order reaction?

Ans ✓ 1.

Decomposition of $N_2O$ in presence of catalyst

✗ 2. Inversion of $C_{12}H_{22}O_{11}$

✗ 3. Hydrolysis of $CH_3COOCH_3$

✗ 4. Decomposition of $N_2O_5$

Question Type : **MCQ**
Question ID : **37135116452**
Option 1 ID : **37135165808**
Option 2 ID : **37135165807**
Option 3 ID : **37135165806**
Option 4 ID : **37135165805**
Status : **Answered**
Chosen Option : **1**

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Q.45 Calculate the amount of work done during isothermal expansion of a gas from a volume of 4 $dm^3$ to 6 $dm^3$ against a constant external pressure of 3 atmosphere ?

Ans

✗ 1. $-30{\cdot}4\ J$

✗ 2. $-60{\cdot}8\ J$

✓ 3. $-607{\cdot}8\ J$

✗ 4. $-6{\cdot}0\ J$

Question Type : **MCQ**
Question ID : **37135116486**
Option 1 ID : **37135165943**
Option 2 ID : **37135165941**
Option 3 ID : **37135165944**
Option 4 ID : **37135165942**
Status : **Answered**
Chosen Option : **3**

Q.46 The SI unit of pressure is

Ans

✗ 1. $kg\ ms^{-2}$

✗ 2. $kg\ ms^{2}$

✓ 3. $kg\ m^{-1}s^{-2}$

✗ 4. $kg\ m^{2}s$

Question Type : **MCQ**
Question ID : **37135116477**
Option 1 ID : **37135165905**
Option 2 ID : **37135165907**
Option 3 ID : **37135165906**
Option 4 ID : **37135165908**
Status : **Answered**
Chosen Option : **3**

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Q.47

Identify 'A' in the following reaction, $A \xrightarrow[Pd\text{-}BaSO_4]{H_2} C_6H_5CHO + HCl$

Ans

✗ 1. Benzoic acid

✗ 2. Benzyl chloride

✓ 3. Benzoyl chloride

✗ 4. Chlorobenzene

Question Type : **MCQ**
Question ID : **37135116458**
Option 1 ID : **37135165829**
Option 2 ID : **37135165832**
Option 3 ID : **37135165831**
Option 4 ID : **37135165830**
Status : **Answered**
Chosen Option : **3**

Q.48

Which of following 0·1 m aqueous solution exhibits highest osmotic pressure at 25°C?

Ans

✗ 1. urea

✓ 2. $CoCl_2$

✗ 3. KCl

✗ 4. glucose

Question Type : **MCQ**
Question ID : **37135116481**
Option 1 ID : **37135165922**
Option 2 ID : **37135165923**
Option 3 ID : **37135165924**
Option 4 ID : **37135165921**
Status : **Answered**
Chosen Option : **2**

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**Q.49** What is the value of $\Delta H^{\circ}$ for the formation of ethanol from ethene gas and liquid water from following data ?

(i) $C_2H_5OH_{(l)} + 3O_{2(g)} \longrightarrow 2CO_{2(g)} + 3H_2O_{(l)}\ \Delta H^{\circ} = -1368\ kJ$

(ii) $C_2H_{4(g)} + 3O_{2(g)} \longrightarrow 2CO_{2(g)} + 2H_2O_{(l)}\ \Delta H^{\circ} = 1410\ kJ$

**Ans**

✗ 1. $-1326{\cdot}0\ kJ$

✗ 2. $-4188{\cdot}0\ kJ$

✓ 3. $-42{\cdot}0\ kJ$

✗ 4. $-2778{\cdot}0\ kJ$

Question Type : **MCQ**
Question ID : **37135116471**
Option 1 ID : **37135165883**
Option 2 ID : **37135165884**
Option 3 ID : **37135165882**
Option 4 ID : **37135165881**
Status : **Answered**
Chosen Option : **3**

**Q.50** Which of the following oxyacids of chlorine does not contain lone pair of electron on chlorine atom ?

**Ans**

✗ 1. $HOClO_2$

✗ 2. $HOCl$

✓ 3. $HOClO_3$

✗ 4. $HOClO$

Question Type : **MCQ**
Question ID : **37135116475**
Option 1 ID : **37135165899**
Option 2 ID : **37135165897**
Option 3 ID : **37135165900**
Option 4 ID : **37135165898**
Status : **Answered**
Chosen Option : **3**

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Section : **Mathematics**

**Q.1**

With usual notations, in triangle ABC, $a = \sqrt{3} + 1$, $b = \sqrt{3} - 1$ and $m\angle C = 60°$,

then $A - B =$

**Ans**

✗ 1. $45°$

✗ 2. $60°$

✗ 3. $30°$

✓ 4. $90°$

Question Type : **MCQ**
Question ID : **37135116517**
Option 1 ID : **37135166066**
Option 2 ID : **37135166067**
Option 3 ID : **37135166065**
Option 4 ID : **37135166068**
Status : **Answered**
Chosen Option : **3**

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Q.2

If $AX = B$, where $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & -1 & 0 \\ 3 & 3 & -4 \end{bmatrix}$, $B = \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}$ and $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$, then $x + y + z =$

Ans

1. 2

2. 3

3. 6

4. 1

Question Type : **MCQ**
Question ID : **37135116536**
Option 1 ID : **37135166143**
Option 2 ID : **37135166144**
Option 3 ID : **37135166141**
Option 4 ID : **37135166142**
Status : **Answered**
Chosen Option : **1**

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Q.3

If the points $A(5, k)$, $B(-3, 1)$ and $C(-7, -2)$ are collinear, then $k =$

Ans

1. $7$

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

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

4. $-7$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116529** |
| Option 1 ID : | **37135166113** |
| Option 2 ID : | **37135166116** |
| Option 3 ID : | **37135166115** |
| Option 4 ID : | **37135166114** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.4

If $ax^2+2hxy+by^2+2gx+2fy+c=0$ represents a joint equation of directrices of the hyperbola $16x^2-9y^2=144$, then $g+f-c=$

Ans

✗ 1. $-81$

✗ 2. $-25$

✓ 3. $81$

✗ 4. $25$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116509** |
| Option 1 ID : | **37135166036** |
| Option 2 ID : | **37135166034** |
| Option 3 ID : | **37135166035** |
| Option 4 ID : | **37135166033** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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**Q.5**

The population P(t) of a certain mouse species at time t satisfies the differential equation $\frac{dP(t)}{dt} = 0 \cdot 5P(t) - 450 \cdot$ If $P(0) = 850$, then the time at which the population becomes zero is

**Ans**

✗ 1. $\left(\frac{1}{2}\right)\log 18$

✗ 2. $\log 18$

✓ 3. $2\log 18$

✗ 4. $\log 9$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116526** |
| Option 1 ID : | **37135166101** |
| Option 2 ID : | **37135166102** |
| Option 3 ID : | **37135166103** |
| Option 4 ID : | **37135166104** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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Q.6

If the points $(1,1,\lambda)$ and $(-3,0,1)$ are equidistant from the plane

$3x + 4y - 12z + 13 = 0$, then integer value of $\lambda$ is

Ans

1. $2$

2. $1$

3. $3$

4. $4$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116525** |
| Option 1 ID : | **37135166098** |
| Option 2 ID : | **37135166097** |
| Option 3 ID : | **37135166099** |
| Option 4 ID : | **37135166100** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.7

If $x = a\,(1 - cos\theta),\ \ y = a\,(\theta - sin\theta)$, then $\frac{d^2y}{dx^2} =$

Ans

1. $\dfrac{\cos^2\left(\frac{\theta}{2}\right)}{2\,\text{a}\,\text{cosec}\,\theta}$

2. $\dfrac{\text{cosec}\,\theta}{2\,a\cos^2\left(\frac{\theta}{2}\right)}$

3. $\dfrac{\cos\left(\frac{\theta}{2}\right)}{2\,\text{a}\sin\theta}$

4. $\dfrac{\sin\left(\frac{\theta}{2}\right)}{2\,\text{a}\cos\theta}$

Question Type : **MCQ**
Question ID : **37135116535**
Option 1 ID : **37135166139**
Option 2 ID : **37135166138**
Option 3 ID : **37135166137**
Option 4 ID : **37135166140**
Status : **Answered**
Chosen Option : **4**

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Q.8

If A and B are independent events and $P(A)=\frac{2}{3}$, $P(B)=\frac{3}{5}$, then $P(A' \cap B) =$

Ans

1. $\frac{4}{15}$

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

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

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

Question Type : **MCQ**
Question ID : **37135116532**
Option 1 ID : **37135166128**
Option 2 ID : **37135166127**
Option 3 ID : **37135166126**
Option 4 ID : **37135166125**
Status : **Answered**
Chosen Option : **2**

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Q.9 The differential equation whose solution is $y = c_1 cosax + c_2 sinax$ (Where $c_1$ and $c_2$ are arbitrary constants) is

Ans

1. $\frac{d^2y}{dx^2} - a^2y = 0$

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

3. $\frac{d^2y}{dx^2} + ay^2 = 0$

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

Question Type : **MCQ**
Question ID : **37135116505**
Option 1 ID : **37135166020**
Option 2 ID : **37135166018**
Option 3 ID : **37135166019**
Option 4 ID : **37135166017**
Status : **Answered**
Chosen Option : **2**

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Q.10

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

Ans

1. $\frac{1}{2}\cos\sqrt{x} + c$

2. $2\sin\sqrt{x} + c$

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

4. $2\cos\sqrt{x} + c$

Question Type : **MCQ**
Question ID : **37135116508**
Option 1 ID : **37135166031**
Option 2 ID : **37135166030**
Option 3 ID : **37135166032**
Option 4 ID : **37135166029**
Status : **Answered**
Chosen Option : **2**

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Q.11

If $f(x) = \frac{|x-2|}{x-2}$, for $x \neq 2$

$= 1$ , for $x = 2$,

then which of the following statements is true?

Ans

1. $f(x)$ is continuous at $x = 2$

2. $\lim_{x \to 2^-} f(x) = f(2)$

3. $\lim_{x \to 2^+} f(x) = \lim_{x \to 2^-} f(x)$

4. $f(x)$ is discontinuous at $x = 2$

Question Type : **MCQ**
Question ID : **37135116546**
Option 1 ID : **37135166181**
Option 2 ID : **37135166184**
Option 3 ID : **37135166182**
Option 4 ID : **37135166183**
Status : **Answered**
Chosen Option : **4**

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Q.12

If line $x + y = 0$ touches the curve $ax^2 = 2y^2 - b$ at $(1, -1)$,

then the values of a and b are respectively

Ans

1. $0, 2$

2. $-2, 0$

3. $0, -2$

4. $2, 0$

Question Type : **MCQ**
Question ID : **37135116523**
Option 1 ID : **37135166089**
Option 2 ID : **37135166091**
Option 3 ID : **37135166092**
Option 4 ID : **37135166090**
Status : **Answered**
Chosen Option : **4**

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Q.13

$$\int \frac{dx}{\cos 2x + \sin^2 x} =$$

Ans

✗ 1. $sinx + c$

✓ 2. $tanx + c$

✗ 3. $sec^2x + c$

✗ 4. $cosx + c$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116510** |
| Option 1 ID : | **37135166040** |
| Option 2 ID : | **37135166038** |
| Option 3 ID : | **37135166037** |
| Option 4 ID : | **37135166039** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.14

$$\sin 690° \times \sec 240° =$$

Ans

✔ 1. $1$

✘ 2. $-1$

✘ 3. $\frac{-1}{2}$

✘ 4. $\frac{1}{2}$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116541** |
| Option 1 ID : | **37135166164** |
| Option 2 ID : | **37135166161** |
| Option 3 ID : | **37135166163** |
| Option 4 ID : | **37135166162** |
| Status : | **Answered** |
| Chosen Option : | **1** |

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**Q.15**

The equation of a plane containing the lines $\vec{r} = (\hat{i} + 2\hat{j} - 4\hat{k}) + \lambda(2\hat{i} + 3\hat{j} + 6\hat{k})$ and

$\vec{r} = (\hat{i} + 3\hat{j} + 4\hat{k}) + \mu(\hat{i} + \hat{j} - \hat{k})$ is

**Ans**

✗ 1. $9x + 8y + z + 11 = 0$

✗ 2. $9x - 8y - z - 11 = 0$

✗ 3. $9x - 8y - z + 11 = 0$

✓ 4. $9x - 8y + z + 11 = 0$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116520** |
| Option 1 ID : | **37135166077** |
| Option 2 ID : | **37135166079** |
| Option 3 ID : | **37135166078** |
| Option 4 ID : | **37135166080** |
| Status : | **Answered** |
| Chosen Option : | **4** |

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Q.16

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

Ans

1. $0$ ✔

2. $2$ ✘

3. $1$ ✘

4. $3$ ✘

Question Type : **MCQ**
Question ID : **37135116548**
Option 1 ID : **37135166189**
Option 2 ID : **37135166191**
Option 3 ID : **37135166190**
Option 4 ID : **37135166192**
Status : **Answered**
Chosen Option : **1**

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Q.17

The rate of decay of mass of a certain substance at time 't' is proportional to the mass at that instant. The time during which the original mass of $m_0$ gm. will be left to $m_1$ gm. is

(K is constant of proportionality)

Ans

1. $K \log \left(\frac{m_1}{m_0}\right)$

2. $\left(\frac{1}{K}\right) \log \left(\frac{m_1}{m_0}\right)$

3. $\left(\frac{1}{K}\right) \log \left(\frac{m_0}{m_1}\right)$

4. $K \log \left(\frac{m_0}{m_1}\right)$

Question Type : **MCQ**
Question ID : **37135116528**
Option 1 ID : **37135166110**
Option 2 ID : **37135166112**
Option 3 ID : **37135166111**
Option 4 ID : **37135166109**
Status : **Answered**
Chosen Option : **3**

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Q.18 If a, b, c are non-negative distinct numbers and $a\hat{i} + a\hat{j} + c\hat{k}$, $\hat{i} + \hat{k}$ and $c\hat{i} + c\hat{j} + b\hat{k}$ are coplanar vectors, then

Ans

1. a, c, b are in A.P.

2. a, b, c are in G.P.

3. a, c, b are in G.P.

4. a, b, c are in A.P.

Question Type : **MCQ**
Question ID : **37135116504**
Option 1 ID : **37135166014**
Option 2 ID : **37135166016**
Option 3 ID : **37135166015**
Option 4 ID : **37135166013**
Status : **Answered**
Chosen Option : **3**

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**Q.19**

If foci of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}=1\ (b^2<16)$ and the hyperbola $\frac{x^2}{144}-\frac{y^2}{81}=\frac{1}{25}$ coincide,

then the value of $b^2$ is

**Ans**

✗ 1. 4

✗ 2. 9

✗ 3. 14

✓ 4. 7

Question Type : **MCQ**
Question ID : **37135116524**
Option 1 ID : **37135166094**
Option 2 ID : **37135166096**
Option 3 ID : **37135166095**
Option 4 ID : **37135166093**
Status : **Answered**
Chosen Option : **1**

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Q.20

The principal value of $\sin^{-1}\left(-\frac{1}{2}\right)$ is

Ans

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

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

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

4. $-\frac{\pi}{6}$

Question Type : **MCQ**
Question ID : **37135116522**
Option 1 ID : **37135166087**
Option 2 ID : **37135166085**
Option 3 ID : **37135166088**
Option 4 ID : **37135166086**
Status : **Answered**
Chosen Option : **4**

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Q.21

The separate equations of the lines represented by the equation

$3x^2 - 2\sqrt{3}\,xy - 3y^2 = 0$ are

Ans

1. $x - \sqrt{3}\,y = 0$ and $3x + \sqrt{3}\,y = 0$

2. $x + \sqrt{3}\,y = 0$ and $3x + \sqrt{3}\,y = 0$

3. $x - \sqrt{3}\,y = 0$ and $3x - \sqrt{3}\,y = 0$

4. $x + \sqrt{3}\,y = 0$ and $3x - \sqrt{3}\,y = 0$

Question Type : **MCQ**
Question ID : **37135116511**
Option 1 ID : **37135166041**
Option 2 ID : **37135166042**
Option 3 ID : **37135166044**
Option 4 ID : **37135166043**
Status : **Answered**
Chosen Option : **1**

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Q.22

If $A = \begin{bmatrix} 1 & 1 \\ 1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 1 \\ 3 & 1 \end{bmatrix}$, then $(A + B)^{-1} =$

Ans

1. $\frac{1}{7}\begin{bmatrix} 3 & 2 \\ 4 & 5 \end{bmatrix}$

2. $7\begin{bmatrix} 3 & 2 \\ 4 & 5 \end{bmatrix}$

3. $\frac{1}{7}\begin{bmatrix} 3 & -2 \\ -4 & 5 \end{bmatrix}$

4. $7\begin{bmatrix} 3 & -2 \\ -4 & 5 \end{bmatrix}$

Question Type : **MCQ**
Question ID : **37135116539**
Option 1 ID : **37135166154**
Option 2 ID : **37135166156**
Option 3 ID : **37135166153**
Option 4 ID : **37135166155**
Status : **Answered**
Chosen Option : **2**

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Q.23

The verbal statement of the same meaning, of the statement 'If the grass is green then it rains in July' is

Ans

1. The grass is not green and it does not rains in July.

2. The grass is not green or it rains in July.

3. If the grass is not green, then it does not rain in July.

4. The grass is not green if and only if it rains in July.

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116542** |
| Option 1 ID : | **37135166167** |
| Option 2 ID : | **37135166166** |
| Option 3 ID : | **37135166165** |
| Option 4 ID : | **37135166168** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.24

If $x = 3sin\theta,\ y = 3\cos\theta\cos\phi,\ z = 3\cos\theta\sin\emptyset,$ then $x^2 + y^2 + z^2 =$

Ans

1. 18

2. 27

3. 9

4. 3

Question Type : **MCQ**
Question ID : **37135116544**
Option 1 ID : **37135166175**
Option 2 ID : **37135166176**
Option 3 ID : **37135166174**
Option 4 ID : **37135166173**
Status : **Answered**
Chosen Option : **1**

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Q.25

$$\int_{-2}^{1} [x+1]\,dx =$$

(Where $[x]$ is greatest integer function not greater than $x$)

Ans

1. $1$

2. $0$

3. $-1$

4. $2$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116550** |
| Option 1 ID : | **37135166198** |
| Option 2 ID : | **37135166197** |
| Option 3 ID : | **37135166199** |
| Option 4 ID : | **37135166200** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.26

If the origin is the centroid of the triangle whose vertices are $A(2, p, -3)$, $B(q, -2, 5)$ and $C(-5, 1, r)$, then

Ans

✗ 1.

$p = -1, \quad q = 3, \quad r = -2$

✗ 2.

$p = 1, \quad q = -3, \quad r = -2$

✗ 3.

$p = 1, \quad q = 3, \quad r = 2$

✓ 4.

$p = 1, \quad q = 3, \quad r = -2$

Question Type : **MCQ**
Question ID : **37135116506**
Option 1 ID : **37135166022**
Option 2 ID : **37135166023**
Option 3 ID : **37135166024**
Option 4 ID : **37135166021**
Status : **Answered**
Chosen Option : **4**

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Q.27

Write the statement in symbolic form 'Sandeep neither likes tea nor coffee but enjoys a soft drink'. Where p : Sandeep likes tea

q : Sandeep likes coffee

r : Sandeep enjoys a soft drink

Ans

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

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

3. $(\sim p \vee \sim q) \vee r$

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

Question Type : **MCQ**
Question ID : **37135116545**
Option 1 ID : **37135166180**
Option 2 ID : **37135166178**
Option 3 ID : **37135166177**
Option 4 ID : **37135166179**
Status : **Answered**
Chosen Option : **2**

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Q.28

If $f(x) = \frac{x+2}{18}$, $-2 < x < 4$

$= 0$ , otherwise,

is the p. d. f. of a r. v. X, then the value of $P(|X|<2)$ is

Ans

1. $\frac{5}{9}$

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

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

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

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116507** |
| Option 1 ID : | **37135166028** |
| Option 2 ID : | **37135166027** |
| Option 3 ID : | **37135166026** |
| Option 4 ID : | **37135166025** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.29

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

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116527**
Option 1 ID : **37135166108**
Option 2 ID : **37135166107**
Option 3 ID : **37135166105**
Option 4 ID : **37135166106**
Status : **Answered**
Chosen Option : **2**

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Q.30

If the direction cosines of a line are $\frac{1}{c}, \frac{1}{c}, \frac{1}{c}$ then

Ans

1. $2 < c < 3$

2. $c = \pm 3$

3. $c = \pm \sqrt{3}$

4. $c = \pm \frac{1}{\sqrt{3}}$

Question Type : **MCQ**
Question ID : **37135116531**
Option 1 ID : **37135166121**
Option 2 ID : **37135166122**
Option 3 ID : **37135166123**
Option 4 ID : **37135166124**
Status : **Answered**
Chosen Option : **3**

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Q.31

If $\frac{1}{4}$, a, b, $\frac{1}{19}$ form a H.P. then the values of a and b are respectively

Ans

1. $\frac{1}{12}, \frac{1}{15}$

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

3. $\frac{1}{9}, \frac{1}{14}$

4. $\frac{1}{11}, \frac{1}{17}$

Question Type : **MCQ**
Question ID : **37135116514**
Option 1 ID : **37135166055**
Option 2 ID : **37135166054**
Option 3 ID : **37135166053**
Option 4 ID : **37135166056**
Status : **Answered**
Chosen Option : **2**

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Q.32

$$\int_0^{\frac{\pi}{2}} (e^{sinx} - e^{cosx})\, dx =$$

Ans

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

2. $0$

3. $1$

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

Question Type : **MCQ**
Question ID : **37135116501**
Option 1 ID : **37135166001**
Option 2 ID : **37135166003**
Option 3 ID : **37135166002**
Option 4 ID : **37135166004**
Status : **Answered**
Chosen Option : **2**

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Q.33 The minimum value for the LPP $Z = 6x + 2y$,

subject to $2x + y \geq 16, x \geq 6, y \geq 1$ is

Ans

✔ 1. 44

✘ 2. 47

✘ 3. 24

✘ 4. 34

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116503** |
| Option 1 ID : | **37135166011** |
| Option 2 ID : | **37135166009** |
| Option 3 ID : | **37135166010** |
| Option 4 ID : | **37135166012** |
| Status : | **Answered** |
| Chosen Option : | **2** |

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Q.34

A fair coin is tossed 2 times. A person receives ₹ $X^3$ if he gets X number of heads.

His expected gain is =

Ans

✗ 1. ₹ 2.00

✗ 2. ₹ 1.00

✓ 3. ₹ 2.50

✗ 4. ₹ 5.20

Question Type : **MCQ**
Question ID : **37135116549**
Option 1 ID : **37135166196**
Option 2 ID : **37135166195**
Option 3 ID : **37135166193**
Option 4 ID : **37135166194**
Status : **Marked For Review**
Chosen Option : **3**

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Q.35

If $\bar{a} = \hat{\imath} + 5\hat{k}$, $\bar{b} = 2\hat{\imath} + 3\hat{k}$, $\bar{c} = 4\hat{\imath} - \hat{\jmath} + 2\hat{k}$ and $\bar{d} = \hat{\imath} - \hat{\jmath}$,

then $(\bar{c} - \bar{a}) \cdot (\bar{b} \times \bar{d}) =$

Ans

✔ 1. 12

✘ 2. 20

✘ 3. 30

✘ 4. 10

Question Type : **MCQ**
Question ID : **37135116513**
Option 1 ID : **37135166050**
Option 2 ID : **37135166051**
Option 3 ID : **37135166052**
Option 4 ID : **37135166049**
Status : **Answered**
Chosen Option : **1**

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Q.36

If $f(x) = x^2 - 3x + 4$ and $f(x) = f(2x + 1)$, then $x =$

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116521**
Option 1 ID : **37135166084**
Option 2 ID : **37135166083**
Option 3 ID : **37135166082**
Option 4 ID : **37135166081**
Status : **Answered**
Chosen Option : **1**

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Q.37

The area bounded by the parabola $y^2 = 16x$ and its latus - rectum in the first quadrant is

Ans

1. $128$ sq. units

2. $\frac{64}{3}$ sq. units

3. $\frac{128}{3}$ sq. units

4. $64$ sq. units

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116502** |
| Option 1 ID : | **37135166008** |
| Option 2 ID : | **37135166005** |
| Option 3 ID : | **37135166006** |
| Option 4 ID : | **37135166007** |
| Status : | **Answered** |
| Chosen Option : | **3** |

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Q.38

20 meters wire is available to fence a flower bed in the form of a circular sector. If the flower bed should have the greatest possible surface area, then the radius of the circle is

Ans

1. 2m

2. 4m

3. 5m

4. 10m

Question Type : **MCQ**
Question ID : **37135116516**
Option 1 ID : **37135166061**
Option 2 ID : **37135166064**
Option 3 ID : **37135166063**
Option 4 ID : **37135166062**
Status : **Answered**
Chosen Option : **2**

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Q.39

If the radius of a circle $x^2 + y^2 - 4x + 6y - k = 0$ is 5, then k =

Ans

1. $-12$

2. $-25$

3. $25$

4. $12$

Question Type : **MCQ**
Question ID : **37135116534**
Option 1 ID : **37135166133**
Option 2 ID : **37135166135**
Option 3 ID : **37135166136**
Option 4 ID : **37135166134**
Status : **Answered**
Chosen Option : **1**

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Q.40

The equation of normal to the curve $2x^2 + 3y^2 - 5 = 0$ at P $(1, 1)$ is

Ans

1. $3x + 2y + 1 = 0$

2. $3x - 2y + 1 = 0$

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

4. $3x - 2y - 1 = 0$

Question Type : **MCQ**
Question ID : **37135116518**
Option 1 ID : **37135166071**
Option 2 ID : **37135166072**
Option 3 ID : **37135166070**
Option 4 ID : **37135166069**
Status : **Marked For Review**
Chosen Option : **4**

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Q.41

The shortest distance between the lines $1 + x = 2y = -12z$ and $x = y + 2 = 6z - 6$ is

Ans

1. 1 unit

2. 4 units

3. 2 units

4. 3 units

Question Type : **MCQ**
Question ID : **37135116547**
Option 1 ID : **37135166185**
Option 2 ID : **37135166188**
Option 3 ID : **37135166186**
Option 4 ID : **37135166187**
Status : **Answered**
Chosen Option : **4**

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Q.42

The particular solution of the differential equation $cos\left(\frac{dy}{dx}\right) = a$, under the conditions $a \in R$ and $y(0) = 2$ is

Ans

1. $\cos\left(\frac{x-2}{y-2}\right) = a$

2. $\cos^{-1}\left(\frac{y-2}{x}\right) = a$

3. $\cos\left(\frac{y-2}{x}\right) = a$

4. $\cos\left(\frac{x-2}{y+2}\right) = a$

Question Type : **MCQ**
Question ID : **37135116530**
Option 1 ID : **37135166119**
Option 2 ID : **37135166117**
Option 3 ID : **37135166118**
Option 4 ID : **37135166120**
Status : **Marked For Review**
Chosen Option : **3**

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Q.43

If $\sqrt{x+y}+\sqrt{y-x}=5$, then $\left(\frac{d^2y}{dx^2}\right)=$

Ans

1. $\frac{2}{25}$

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

3. $\frac{-2}{5}$

4. $\frac{-2}{25}$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116537** |
| Option 1 ID : | **37135166148** |
| Option 2 ID : | **37135166146** |
| Option 3 ID : | **37135166145** |
| Option 4 ID : | **37135166147** |
| Status : | **Answered** |
| Chosen Option : | **3** |

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Q.44

The domain of a function $f(y) = \frac{\cos^{-1}(y-5)}{\sqrt{25-y^2}}$ is

Ans

1. $(4, 6]$

2. $(-5, 5)$

3. $[4, 5)$

4. $(4, 5]$

Question Type : **MCQ**
Question ID : **37135116519**
Option 1 ID : **37135166075**
Option 2 ID : **37135166074**
Option 3 ID : **37135166073**
Option 4 ID : **37135166076**
Status : **Answered**
Chosen Option : **2**

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**Q.45** In a box containing 100 bulbs, 10 are defective. The probability that out of 20 bulbs selected at random, none is defective is

**Ans**

✗ 1. $10\left(\frac{1}{10}\right)^{20}$

✗ 2. $20\left(\frac{9}{10}\right)^{20}$

✗ 3. $5\left(\frac{1}{10}\right)^{20}$

✓ 4. $\left(\frac{9}{10}\right)^{20}$

Question Type : **MCQ**
Question ID : **37135116512**
Option 1 ID : **37135166047**
Option 2 ID : **37135166045**
Option 3 ID : **37135166048**
Option 4 ID : **37135166046**
Status : **Marked For Review**
Chosen Option : **4**

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Q.46

$$\int_0^1 \frac{x^2}{1+x^2}dx =$$

Ans

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

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

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

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

Question Type : **MCQ**
Question ID : **37135116540**
Option 1 ID : **37135166157**
Option 2 ID : **37135166158**
Option 3 ID : **37135166159**
Option 4 ID : **37135166160**
Status : **Marked For Review**
Chosen Option : **2**

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**Q.47**

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

**Ans**

✔ 1. $y=\sqrt{1-x^2}+c\,(1-x^2)$

✘ 2. $y=2\sqrt{1-x^2}+c$

✘ 3. $y=2\sqrt{1-x^2}+c\,(1+x^2)$

✘ 4. $y\sqrt{1-x^2}=c\,(1-x^2)$

Question Type : **MCQ**
Question ID : **37135116515**
Option 1 ID : **37135166058**
Option 2 ID : **37135166059**
Option 3 ID : **37135166060**
Option 4 ID : **37135166057**
Status : **Answered**
Chosen Option : **2**

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Q.48

$$\sin\left(\frac{\pi}{3}+x\right)-\cos\left(\frac{\pi}{6}+x\right)=$$

Ans

1. $-cosx$

2. $-sinx$

3. $cosx$

4. $sinx$

| | |
|---|---|
| Question Type : | **MCQ** |
| Question ID : | **37135116538** |
| Option 1 ID : | **37135166152** |
| Option 2 ID : | **37135166150** |
| Option 3 ID : | **37135166151** |
| Option 4 ID : | **37135166149** |
| Status : | **Marked For Review** |
| Chosen Option : | **4** |

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Q.49

If $y = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \ldots\ldots$ then $\frac{dy}{dx} =$

Ans

1. $y - 1$

2. $y + 1$

3. $y^2 - 1$

4. $y$

Question Type : **MCQ**
Question ID : **37135116543**
Option 1 ID : **37135166170**
Option 2 ID : **37135166171**
Option 3 ID : **37135166172**
Option 4 ID : **37135166169**
Status : **Marked For Review**
Chosen Option : **4**

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Q.50

$$\int \frac{4e^x + 6e^{-x}}{9e^x - 4e^{-x}} dx = Ax + B\log|9e^{2x} - 4| + c \text{ , then}$$

(Where c is constant of integration)

Ans

1. $A = \frac{3}{2}, B = \frac{35}{36}$

2. $A = \frac{1}{2}, B = \frac{35}{36}$

3. $A = \frac{-3}{2}, B = \frac{35}{36}$

4. $A = \frac{-3}{2}, B = \frac{36}{35}$

Question Type : **MCQ**
Question ID : **37135116533**
Option 1 ID : **37135166129**
Option 2 ID : **37135166130**
Option 3 ID : **37135166131**
Option 4 ID : **37135166132**
Status : **Answered**
Chosen Option : **2**

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