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JEE MAIN 2026

SESSION-2

SHIFT-1 MORNING

VIDEO SOLUTION

SCAN ME

MEMORY BASED QUESTIONS

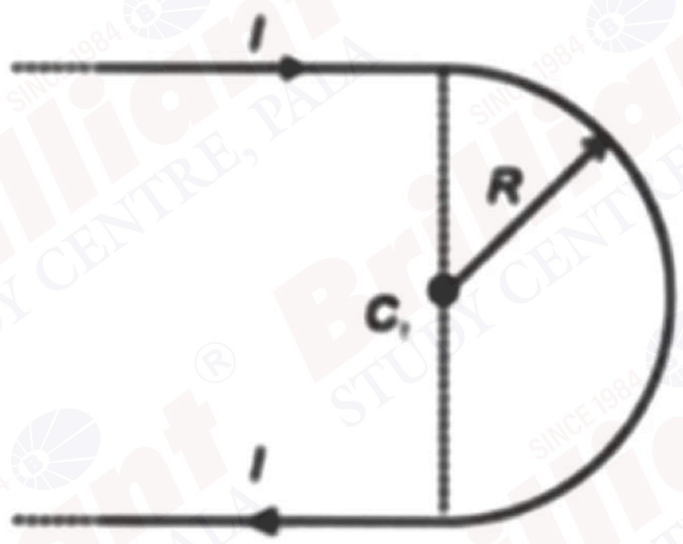
QN. The dimension of $\frac{1}{2}\varepsilon_0 E^2$ is

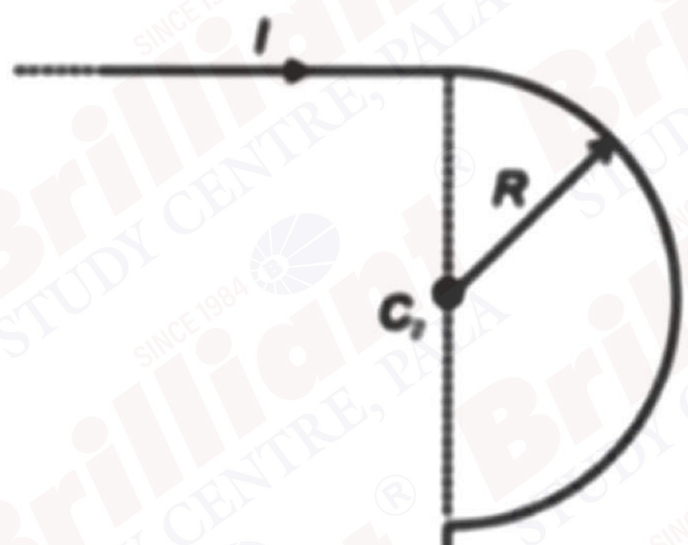
1) MLT^{-2} 2) $ML^{-1}T^{-2}$ 3) MLT^{-1} 4) $ML^{-1}T^{-1}$

QN. A wooden cubic block of relative density 0.4 is floating in water. Side of cube block is 10 cm. When a coin is placed on the block the dips 0.3 cm in equilibrium. Weight of coin is

1) 0.2 N 2) 30 N 3) 0.3 N 4) 3 N

QN. Consider two arrangements of wires, find ratio of magnetic field at centre of the semi-circular part.





1) $\frac{\pi+3}{\pi-1}$ 2) $\frac{\pi+4}{\pi+2}$ 3) $\frac{\pi+2}{\pi+1}$ 4) $\frac{\pi-2}{\pi+1}$

QN. In isobaric reversible process on a diatomic gas, ratio of $\Delta Q : \Delta U : W$ shall be

1) 7 : 5 : 2 2) 5 : 3 : 2 3) 3 : 2 : 1 4) 6 : 5 : 1

QN. Circular motion, angular position θ and time t are related as $\theta = \frac{5t^4}{4} - \frac{t^3}{3}$, then angular acceleration at t = 10 seconds is

1) 1180 rad/s² 2) 130 rad/s² 3) 1480 rad/s² 4) 98 rad /s²

QN. For an ideal gas having $C_p = 3R$ and $C_v = 2R$. Find work done by one mole of the gas in adiabatic expansion when pressure reduces from 8 bar to 1 bar. (Initial temperature = 140°C)

1) 140 R 2) 70 R 3) 826 R 4) 413 R

QN. In YDSE experiment wavelength of light used in 620 nm and separation between slits is 0.2mm. Find angular fringe width

1) 3×10^{-4} 2) 3.1×10^{-3} 3) 1.2×10^{-3} 4) 6.2×10^{-4}

QN. Photons of wavelength λ and 3λ incident on a metal surface if stopping potential for the ejected photoelectrons are $4V_0$ & V_0 respectively. Find threshold wavelength.

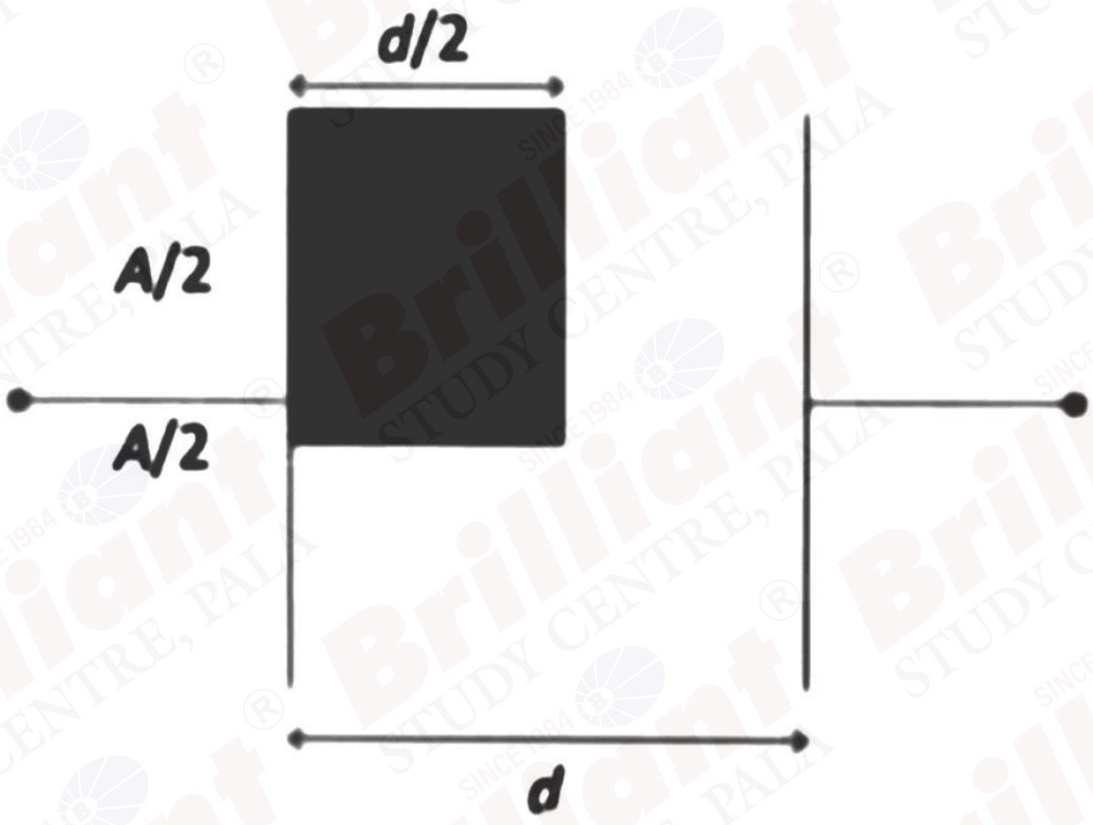
1) 6λ 2) 9λ 3) 2λ 4) 8λ

QN. Find change in surface energy if 512 small drops of radius r = 2 mm merge into a single large drop. (Surface tension = S)

1) $\pi S \times 7.168 \times 10^{-3}$ Joule 2) $\pi S \times 3.584 \times 10^{-3}$ Joule

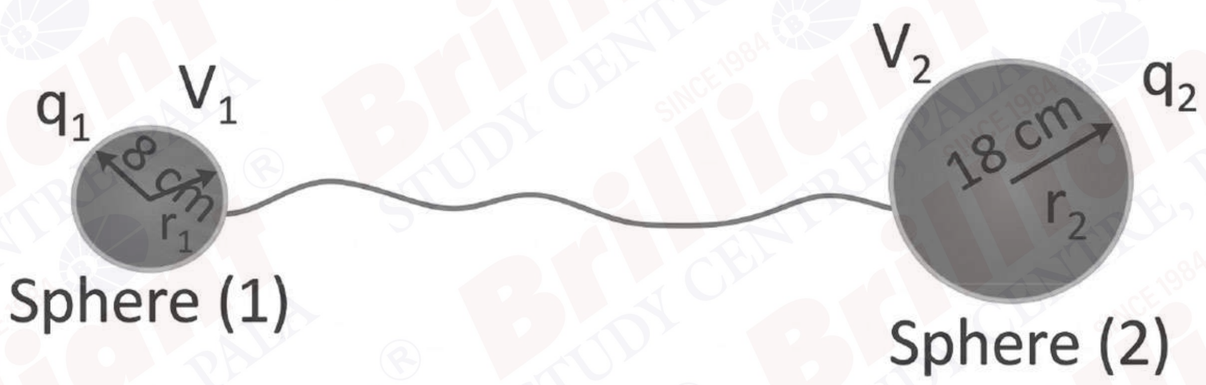
3) $\pi S \times 1.792 \times 10^{-3}$ Joule 4) $\pi S \times 6.284 \times 10^{-3}$ Joule

QN. One fourth volume of an empty capacitor of capacitance C_0 is filled with dielectric of constant K=5. Surface area of dielectric is A/2 & width d/2. If $A >> d^2$ then, new capacitance is



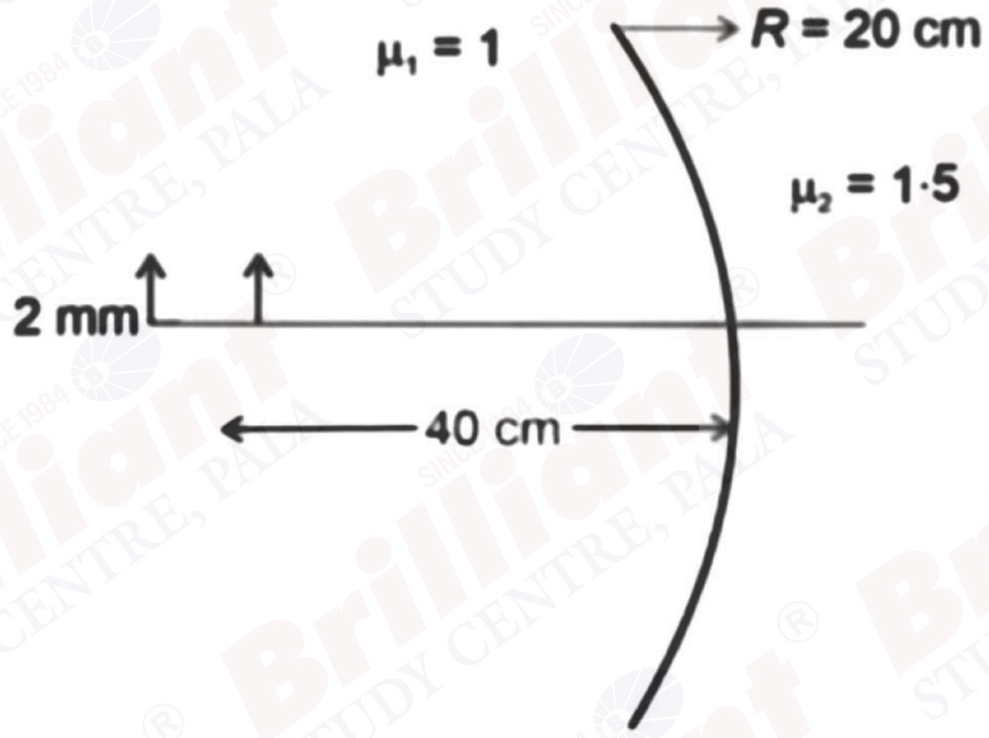
1) $\frac{3}{2}C_0$ 2) $\frac{4}{3}C_0$ 3) $\frac{5}{4}C_0$ 4) $\frac{7}{6}C_0$

QN. Two hallow conducting spheres are separated by large distance. They are connected by a conducting wire. If E_1 and E_2 are the magnitude of electric field near the surface of sphere (1) and sphere (2) respectively, then find the ratio of $\frac{E_1}{E_2}$.



1) 9/2 2) 9/4 3) 2/9 4) 4/9

QN. For the given spherical surface of curvature radius R = 20 cm, object of height h_0 = 2mm is placed at distance 40 cm from surface. Medium on both side of spherical surface have refractive index. μ_1 = 1 and μ_2 = 1.5 respectively as shown. Find height of image

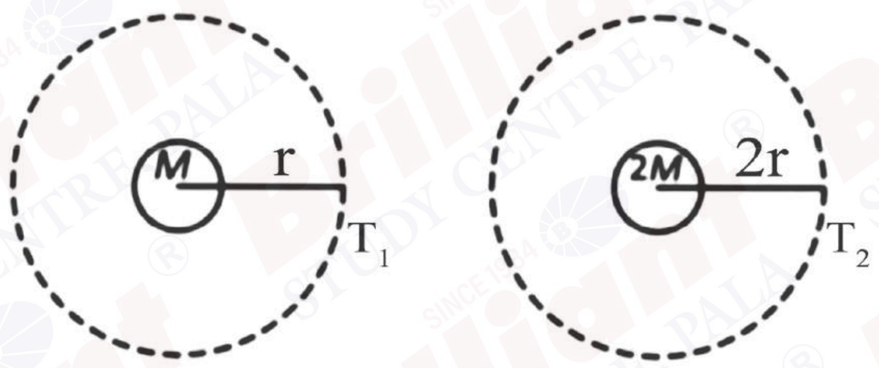


1) 2 mm 2) 1.5 mm 3) 1 mm 4) 4 mm

QN. A charge particle of charge 1 μC moves along y-axis with constant speed 1.6×10^6 m/s. EM wave has electric field component E = 600 sin (ωt - kx) exist in region. Find maximum electric force on the charge.

1) 8×10^{-4} N 2) 6×10^{-4} N 3) 2×10^{-4} N 4) 41×10^{-4} N

QN. Two satellites are revolving around two planets in circular orbits as shown. Find ratio of their time periods.



1) 1/2 2) 1/3 3) 1/4 4) $1/\sqrt{2}$

QN. Power dissipated in an inductor coil is P. If coil of same material, but with number of turns, length and cross-section area being doubt, is used at same current then power dissipated is $\alpha\sqrt{2}P$ then α is _____

QN. For a thin prism of angle A deviation of ray is 8. If refractive index of prism is 1.5 then $\frac{A}{\delta}$ is

QN. 20 g fluoroacetic acid is dissolved in 500 gmwater. If depression in freezing point is 1°C, then calculate K_a for fluoroacetic acid. [Assume molality is same as molarity]

1) 18×10^{-3} 2) 1.5×10^{-5} 3) 1.18×10^{-4} 4) 1.2×10^{-6}

QN. Calculate the energy required for the following process

$Li^{2+} \rightarrow Li^{3+} + e^-$

Given: Ground state energy of Hydrogen is –13.6 eV/atom

1) 13.6 eV/atom 2) 122.4 eV/atom 3) 54.4 eV/atom 4) 30.6 eV/atom

QN. Arrange the following complexes in the increasing order of crystal field splitting energy (Δ_0).

(a) $[Cr(CN)_6]^{3-}$ (b) $[CrF_6]^{3-}$ (c) $[Cr(NH_3)_6]^{3+}$ (d) $[Cr(en)_3]^{3+}$

1) (b) < (c) < (d) < (a) 2) (a) < (b) < (c) < (d)

3) (a) < (d) < (c) < (b) 4) (b) < (a) < (c) < (d)

QN. The orbit angular momentum of e in n^{th} shell of H atom is $\frac{3h}{\pi}$. The total energy e is

1) –0.38 eV 2) –3.4 eV 3) –0.544 eV 4) –0.85 eV

QN. The K_{sp} values of Ag_2CrO_4 and AgBr are 32x and 4y respectively. The ratio of solubilities $\frac{S_1}{S_2}$ is.

[Here, S_1 is solubility of Ag_2CrO_4 and S_2 is solubility of AgBr]

1) $\frac{2x^{1/3}}{y^{1/2}}$ 2) $\frac{x^{1/3}}{y^{1/2}}$ 3) $\frac{x^{1/3}}{2y^{1/2}}$ 4) $\frac{(2x)^{1/3}}{(2y)^{1/2}}$

QN. 18 g of H_2O reacts with x g of Fe to produce Fe_3O_4. 'x', is, (Atomic mass of Fe = 56 u)

1) 84 g 2) 63 g 3) 42 g 4) 51 g

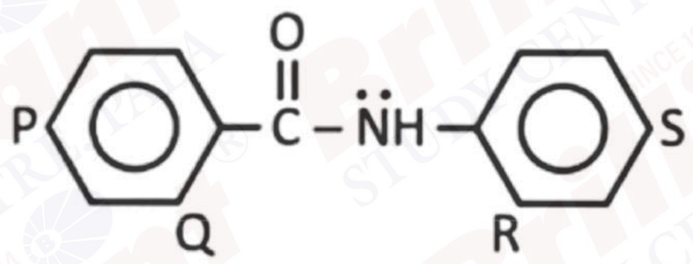
QN. One mole of alkane reacts with 8 mole of O_2. The molecular formula of alkane is

1) C_4H_{10} 2) C_5H_{12} 3) C_7H_{14} 4) C_3H_8

QN. Which compound gives apple green colour in flame test?

1) $BaSO_4$ 2) $Mn_3(PO_4)_2$ 3) $Ca_3(PO_4)4_2$ 4) $Al_2(SO_4)_3$

QN. In the given compound, the electrophile attack will be favoured at



1) S 2) P 3) Q 4) R

QN. Calculate number of isomers of C_5H_{10}, which does not decolorise cold alkaline $KMnO_4$ solution.

The correct increasing order of bond length among the following is

1) $O_2^+, O_2, O_2^-, O_2^{2-}$ 2) $O_2^+, O_2, O_2^{2-}, O_2^-$ 3) $O_2^{2-}, O_2^-, O_2, O_2^+$ 4) O_2^-, O_2^-, O_2^+, O_2

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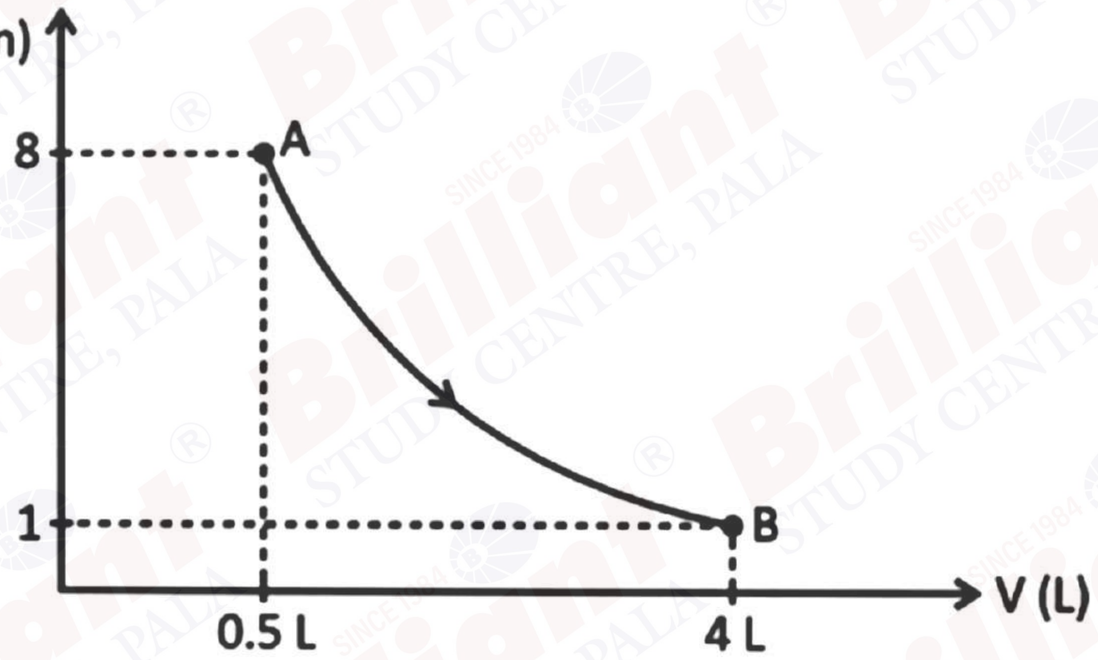
02-03-2026 | SHIFT 1-MORNING

MEMORY BASED QUESTIONS

CHEMISTRY

QN. Calculate work in following process during A to B, in following graph. (Given (V = 3R))



1) –6.2 L.atm 2) –8.3 L. atm 3) –4.8 L.atm 4) –9.2 L.atm

QN. Match List I with List II

List I (Molecules)		List II (Test)	
I)	Ethanol	P)	Neutral $FeCl_3$
II)	Phenol	Q)	Cerric ammonium nitrate
III)	Ethanoic Acid	R)	Schiff reagent
IV)	Acetaldehyde	S)	$NaHCO_3$

1) I-P, II-Q, III-R, IV-S 2) I-Q, II-S, III-P, IV-R

3) I-Q, II-P, III-S, IV-S 4) I-P, II-Q, III-S, IV-R

QN. Which of the following relation about first order and zero order reaction is correct?

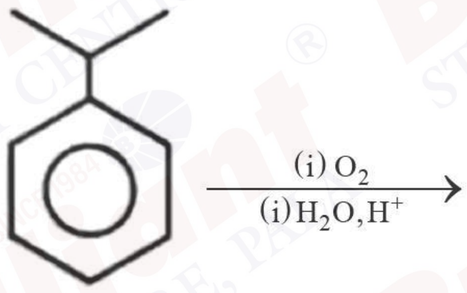
1) $\left(\frac{t_1}{2}\right)_{\text{first order}} = 2\left(t_{100\%}\right)_{\text{first order}}$

2) $\left(t_{1000\%}\right)_{\text{first order}}$ = Infinite time of $t_{\frac{1}{2}}$ of first order

3) $\left(\frac{t_1}{2}\right)_{\text{zero order}} = 2\times\left(t_{100\%}\right)_{\text{zero order}}$

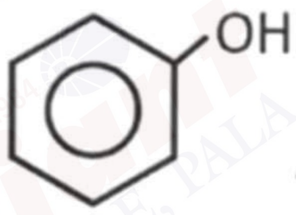
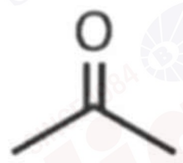
4) $\left(t_{100\%}\right)_{\text{zero order}}$ = infinite time of $t_{\frac{1}{2}}$ of zero order

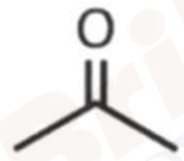
QN. Consider the following reaction:

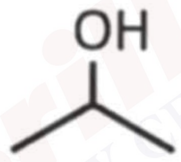


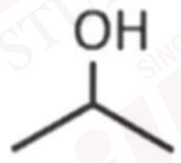
$\xrightarrow[(i)\,H_2O,H^+]{(i)\,O_2}$ Products

Products obtained are

1)  , 

2)  , 

3)  , 

4)  , 

15. Given below are two statements:

Statement I : First I.E. order : Na > Mg > Al

Statement II : 3rd I.E. order : Ca > Al > Na

1) Both Statement I and Statement II are incorrect

2) Statement I is correct but Statement II is incorrect

3) Statement I is incorrect but Statement II is correct

4) Both Statement I and Statement II are correct

QN. 8 g of $\left[CrCl_x\left(H_2O\right)_y\right]Cl_{(3-x)} \times H_2O_{(6-y)}$ react with average $AgNO_3$ to form 8.61 g of AgCl. The value of (x × y) is .....

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MEMORY BASED QUESTIONS

MATHEMATICS

QN If $y = f(x)$ is the solution of the differential equation $(1+\sin x)\frac{dy}{dx}+\cos x = 0$, such that $f(0) = 0$, then $f\left(\frac{\pi}{2}\right)$ is equal to

1) $\ell n\ 2$ 2) $-\ell n\ 2$ 3) $\ell n\ 3$ 4) $\ell n\ 4$

QN If eccentricity of an of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, which passes through point (3,4) is $\frac{\sqrt{5}}{3}$, then length of latus rectum of ellipse is

1) $\frac{4\sqrt{5}}{3}$ 2) $\frac{8\sqrt{5}}{3}$ 3) $\frac{4\sqrt{7}}{3}$ 4) $\frac{8\sqrt{7}}{3}$

QN Number of seven digit number formed by using the digits 1,2,3,4,5 at least once are

QN Let $x \in [-\pi, \pi]$

$S = \{x : \sin x(\sin x + \cos x) = a, a \in 1\}$

Then number of elements in set S is equal to

1) 5 2) 10 3) 9 4) 4

QN Find the Range of $f(x) = \sin^{-1}\left(\frac{1}{x^2-2x+2}\right)$

1) $\left(0,\frac{\pi}{2}\right)$ 2) $\left[0,\frac{\pi}{2}\right]$ 3) $\left(0,\frac{\pi}{2}\right]$ 4) $\left[0,\frac{\pi}{2}\right)$

QN The value of $\int_0^3 \frac{e^x+e^{-x}}{([x])!}dx$ equals (Here [.] denotes the greatest integer function)

1) $\frac{1}{2}\left(e^2+e^3-e^{-2}-e^{-3}\right)$ 2) $e^2-e^3+e^{-2}-e^{-3}$

3) $\frac{1}{4}\left(e^2+e^3-e^{-2}-e^{-3}\right)$ 4) $\frac{1}{2}\left(e^2+e-e^{-1}-e^{-2}\right)$

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MEMORY BASED QUESTIONS

MATHEMATICS

QN If the roots of the equation $x(x+2)+(x+1)(x+3)+.....+(x+(n-1))(x+(n+1))=4n$ are α and $\alpha+2$. Then the value of $|2\alpha+n|$ is

QN Let $f(x)=\begin{cases}\left|\frac{\sin x}{x}\right|, x\neq 0\\ 1 \quad , x=0\end{cases}$. Then total number of critical point(s) in $x\in(-\pi,\pi)$ is

1) 3 2) 5 3) 9 4) 1

QN The value of $\sin\frac{\pi}{18}.\sin\frac{5\pi}{18}.\sin\frac{7\pi}{18}$ is equal to

1) $\frac{1}{8}$ 2) $\frac{1}{16}$ 3) $\frac{1}{4}$ 4) $\frac{1}{32}$

QN Consider two A.P.s such that $A.P_1$ has 1st term 1, common difference 5 and total terms 101 and $A.P_2$ has 1st term 9, common difference 7 and total terms 71 then the number of common terms which appear in both these A.Ps is

QN If $L_1:\frac{x-a}{2}=\frac{y-2}{3}=\frac{z-b}{6}$ and $L_2:\frac{x-b}{3}=\frac{y-7}{6}=\frac{z-1}{3}$ intersect in xy - plane. Then the value of $|a+b|$ is

1) 15 2) 10 3)14 4) 11

QN The domain of $f(x)=\sqrt{\log_{0.6}\left(\left|\frac{2x-5}{x^2-4}\right|\right)}$ $(-\infty,a]\cup[c,d)\cup(e,\infty)$ then the value of a+b+c+d+e is

QN ${}^{36}C_{r+1}=\frac{{}^{35}C_r}{K^2-3}$ such that $S=\{(r,k)\}$, then the number of elements in S is equal to

QN Find $I=\int_0^{2\sqrt{3}}\log_2(x^2+4)dx+\int_2^4\sqrt{2^x-4}dx$

QN A line through (1,1,1) and perpendicular to both $\hat{i}+2\hat{j}+2\hat{k}$ and $2\hat{i}+2\hat{j}+\hat{k}$. Let (a,b,c) be foot of $\perp r$ from origin then 34 (a+b+c)=

QN Let $\sum_{k=1}^{n}a_k=6n^3$ then $\sum_{k=1}^{6}\left(\frac{a_{k+1}-a_k}{36}\right)^2=$

QN If $x+2y+z=12$

$2x+y+\beta z=11$

$8x+4y+\alpha z=37$ has no solutions then $\frac{\alpha}{\beta}=$

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MEMORY BASED QUESTIONS

MATHEMATICS

QN If $a, b, c \in \{1, 2, 3, 4\}$ find the probability that $ax^2 + 2\sqrt{2}bx + c > 0 \forall x \in R$

QN A circle making equal intercepts on axes and it cuts the axes at exactly 3 points. If length of chord x+y+1=0 intercepted by circle is $\sqrt{14}$ then the square of radius of circle is_____

QN $\lim\limits_{x \to 2} \dfrac{x^3 - 5x^2 + ax + b}{\left(\sqrt{x-1} - 1\right)\log(x-1)} = m$. Then $a + b + m =$

QN If $dy = y(2 + \log x)dx, y(0) = 1$ then $y(1) = e$