SINCE 1984

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STUDY CENTRE, PALA

JEE MAIN 2026

SESSION-2

SHIFT-1 MORNING

VIDEO SOLUTION

SCAN ME

MEMORY BASED QUESTIONS

1. 0.2 g of organic compound is subjected to estimation of 'S' by Carius method, giving 0.6 g $BaSO_4$. Find % of S. (Nearest integer)

2. Compare the energy of orbitals for multielectronic species.

	n	l	m
A	3	0	0
B	3	1	–1
C	4	2	0
D	3	2	1

1) C > D > B > A 2) C > B > D > A 3) A > B > C >D 4) A > B > D > C

3. Half life for a first order reacation is 6.93 min. What is the time required (in min) to complete 90% of reaction? (Nearest integer)

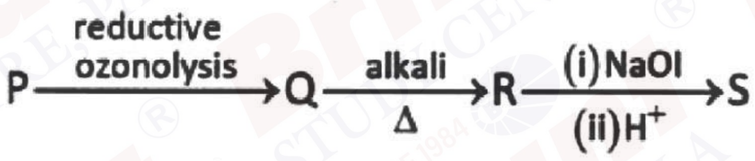
4. Which of the following will produce C_6H_5NC?

1) $C_6H_5NO_2 \xrightarrow{CHCl_3/KOH}$ 2) $C_6H_5NO_2 \xrightarrow{CHCl_3KOH(alc)}$

3) $C_6H_5CH_2 \xrightarrow{AgCN}$ 4) $C_6H_5CH_2Cl \xrightarrow{KCN}$

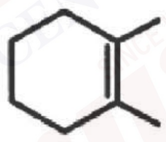
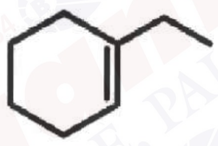
5. How many compounds among the following having sp^3d hybridisation of central atom BrF_5, XeF_5^-, ICl_2^-, ICl_4^-, SF_4, NH_4^+, ClF_3, XeF_2, XeF_4

6. Consider the sequence:



If 'S' is 

, then 'P' is

1)  2)  3)  4) 

7. Given below are two statements:

Statement I : $K_2Cr_2O_7$ can be used as a primary standard

Statement II : Phenolphthalein is a weak base indicator

In the light of above statements choose the correct option.

1) Both statement I and statement II are correct

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 incorrect

8. Consider the following reaction:

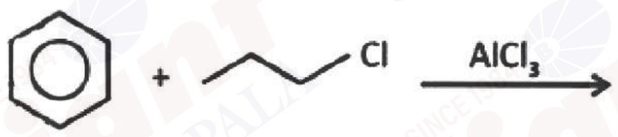
$$\text{Phenol} \xrightarrow{HNO_3} \text{Product} \xrightarrow[\text{Distillation}]{HNO_3} \text{Filtrate}$$

Change in % of oxygen from phenol and product in filtrate is x%. Value of 2x is

9. What amount of residual will be produced on heating 2.76 gram of Ag_2CO_3?

1) 1.08 g 2) 2.16 g 3) 3.2 g 4) 4.32 g

10. Consider the following reaciton



Choose the incorrect statement

1) Isopropylcation intermediate is formed in the reaction

2) Isopropyl benzene is the major product formed

3) Rearrangement of carbocation occurs

4) The product is less reactive than benzene towards electrophilic aromatic substitution

11. pH of 10^{-7} M aq. KOH solution at 25° is,

1) 6.50 2) 6.28 3) 7.02 4) 7.00

12. Given below are two statements:

Statement II : stability of carbanion is as forllows

$$(CH_3)_3\overline{C} < (CH_3)_2 C\overline{H} < CH_3 - CH_2^-$$

Statement II : Stability of carbanion can be explained on the basis of inductive effect

1) Both statement I and II are correct

2) Both statement I and II are incorrect

3) Statement I is correct and statement II is incorrect

4) Statement I is incorrect and statement II is correct

13. Given below two statements:

Statement I : In octahedral complexes each electrons in t_{2g} orbital stabilises by $-0.4\ \Delta_0$ and that of e_g orbital destabilises by $+0.6\Delta_0$

Statement II : All d-electrons are of same energy but after complex is formed its degeneracy is disturbed according to crystal field theory.

1) Both statement I and statement II are correct

2) Both statement I and statement II are incorrect

3) Statement I is correct, statement II is incorrect

4) Statement I is incorrect, statement II is correct

14. Consider the following statements

a) Glucose exists in two anomeric form

b) Melting point of α-anomer is greater than β-anomer

c) Specific rotation of α-anomer is 19° and for β-anomer is 112°

d) α and β anomers are made at temperature 303 K and 371 K

1) a,b,c only 2) a,d only 3) a,c,d only 4) a,b,c,d

15. Statement I : Order of electronegativity is F > O > N

Statement II In OF_2, oxidation state of 'O' is +2 and in N_2O, the value of oxidation state of O is –2

1) Both statement I and statement II are wrong

2) Statement II is wrong, statement I is correct

3) Both statement I and statement II are correct'

4) Statement I is correct, statement II is wrong

16. Arrange the following mixture in increasing order of pH at 25°C (each solution is decimolar).

a) 10 mL of HCl + 10 mL of $Ca(OH)_2$

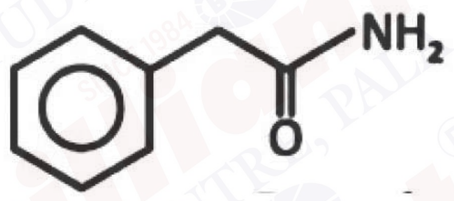
b) 10 mL of HCl + 25 mL of $Ca(OH)_2$

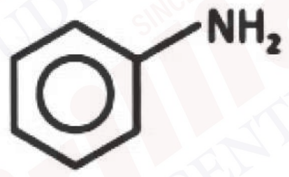
c) 10 mL of HCl + 10 mL of H_2SO_4

1) b < a < c 2) a < b < c 3) c < a < b 4) b < c < a

17. More fraction of H_2O in 10% $\frac{w}{w}$ solution of urea in water is $x \times 10^{-3}$. Find value of x.

18. Consider the following statements:

Statement I :  $\xrightarrow{NaOBr}$ primary aromatic amine

Statement II :  can be prepared by Gabriel phthalimide synthesis

Choose the correct option

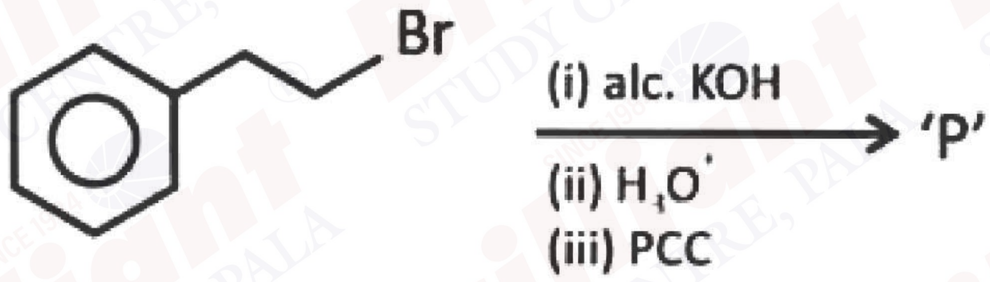
1) Both statement I and statement II are correct

2) Statement I is correct but statement II is incorrect

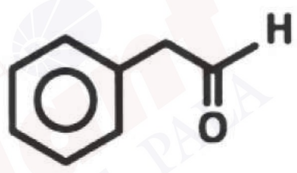
3) Statement I is incorrect, statement II is correct

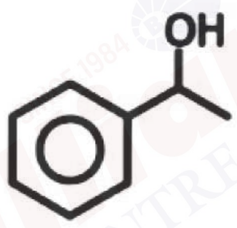
4) Statement I and statement II are incorrect

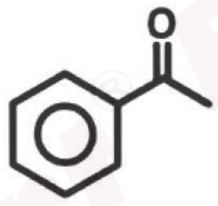
19. Consider the following sequence of reactions

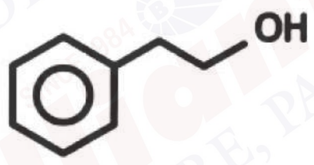


The major final product (P) is

1) 

2) 

3) 

4) 

20. The correct relationship between the molar concentration of the anion $[A^{3-}]$ and the solubility product constant (K_{sp}) for an M_3A_2 type salt

1) $\left[A^{3-}\right]=\left(\frac{K_{sp}}{108}\right)^{\frac{1}{5}}$ 2) $\left[A^{3-}\right]=\left(\frac{8\,K_{sp}}{27}\right)^{\frac{1}{5}}$ 3) $\left[A^{3-}\right]=\left(\frac{27\,K_{sp}}{8}\right)^{\frac{1}{5}}$ 4) $\left[A^{3-}\right]=\left(\frac{4\,K_{sp}}{9}\right)^{\frac{1}{5}}$

21. The order of acidic strength for 0.1 M aqueous solution of following is

A) CH_3COOH

B) H_3PO_3

C) H_3PO_4

1) B > C > A 2) A > C > B 3) A > B > C 4) C > B > A

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05-04-2026 SHIFT 1-MORNING

MEMORY BASED QUESTIONS

MATHS

1. The sum of value $\sum_{n}^{10}=1\frac{528}{n(n+1)(n+2)}$ is equal to

2. The value of $\int_{0}^{\infty}\frac{\log x}{x^2+4}dx$ is equal to

3. Consider an Equilateral ΔPQR. where P(3,5) & $\overline{QR}$ is x+y=4. If the orthocenter of ΔPQR is (a,β). Then $9(\alpha+\beta)=$

4. The area enclosed between the region given by $xy \le 27 \& 1 \le y \le x^2$ is

1) $54\ell n3-\frac{12}{3}$ 2) $52\ell n3-\frac{52}{2}$ 3) $54\ell n2-\frac{14}{2}$ 4) $52\ell n2-\frac{52}{1}$

5. Consider a set $A=\{1,2,3,4,5,6\}$. The number of one-one functions $f:A\to A$ such that $f(1)\ge 3, f(3)\le 4$ $f(2)+f(3)=5$ is equal to

1) 144 2) 72 3) 36 4) 24

6. Let Sn is the sum of first n terms of an A.P. If $S_n=3n^2+S_n$. Then the sum of square of first ten terms of the given P is

1) 15110 2) 15220 3) 14202 4) 14303

7. The square of distance of point P(5,6,7) from the line $\frac{x-2}{2}=\frac{y-5}{3}=\frac{z-2}{4}$ is equal to

8. If tan A and tan B are the roots of the equation $x^2-2x-5=0$. Then, the value of $20\sin^2\left(\frac{A+B}{2}\right)$ is

1) $5+3\sqrt{6}$ 2) $10+3\sqrt{10}$ 3) $5-3\sqrt{2}$ 4) $10-3\sqrt{10}$

9. The value of $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}}\frac{(4-\operatorname{cosec}^2 x)}{\cos^4 4}dx$ is equal to

1) $\frac{16\sqrt{3}}{9}$ 2) $\frac{32\sqrt{3}}{9}$ 3) $\frac{16}{\sqrt{3}}$ 4) 32

10. Let $=\sqrt{7}t+j-\hat{k}, \vec{b}=j+2\hat{k}, \vec{r}\times\vec{a}+\vec{b}\times\vec{a}=0$ and $\vec{r}.\vec{a}=0$. The value of $\left|3\vec{r}\right|^2$ is equal to

1) 56 2) 44 3) 42 4) 48

11. Consider an Ellipse $E:\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ with eccentricity $e=\frac{4}{5}$, focus at (4,0) and the $P(3,\alpha)$ lie on E. Then the area of the triangle POS(in sq. unit)is

1) $\frac{12}{5}$ 2) $\frac{13}{5}$ 3) $\frac{24}{5}$ 4) $\frac{48}{5}$

12. If $\alpha+\frac{\pi}{4}+\sum_{P}^{11}=1\tan^{-1}\left(\frac{2^{P-1}}{1+2^{2P-1}}\right)$, then the value of tan α is

1) 2^9 2) 2^{10} 3) 2^{11} 4) 2^{12}

13. Letter is posted from either KANPUR or ANANTPUR. When envelope was open only "AN" was visible. The probability that it came from ANANTPUR is equal to

1) $\frac{9}{16}$ 2) $\frac{1}{11}$ 3) $\frac{10}{17}$ 4) $\frac{9}{13}$

14. The sum of integral values of P for which the equation $3\sin^2 x-12\cos x-3=P$ has at least one zero, is

1) –60 2) -75 3) –90 4) 110

15. Let p(x,y) is a variable point on the circle $x^2+y^2-6x-8y+21=0$, then the maximum possible distance of p from the vertex of $y^2+6y+13=0$ is

1) $7+2\sqrt{2}$ 2) $2+7\sqrt{2}$ 3) $4+7\sqrt{2}$ 4) $3+2\sqrt{2}$

16. If α,β are the roots of equation $ax^2+bx+c=0$ $|\alpha-\beta|=\sqrt{11}, \alpha+\beta=3i$, then find the value of $\left(\alpha^3+\beta^3\right)^2$ is

17. If $\lim_{x\to0}\frac{1-\cos ax\cos\left((a+1)x\right)\cos\left((a+2)x\right)}{\sin\left((a+1)x\right)^2}=2$. Then the product of all possible values of a is

1) 1 2) –1 3) 2 4) –2

18. Let $S_n=\left(\frac{1}{x^3}-x^4\right)^n$, the sum of coefficients of x^7 & x^{14} is zero. Then find the value of n is

19. Two players A and B play a series of matches. The winner will be the one who wins 5 matches. Find the number of ways in which A can win-------

20. If $x-2y+tz=0$

$3x+5y+t^2z=0$

$6x+ty+f(t)z=0$

$D=0$

$$\begin{vmatrix} 1 & -2 & t \\ 3 & 5 & t^2 \\ 6 & + & \ell(t) \end{vmatrix} = 0$$

has infinitely many solutions then

1) y = f(t) is strictly increasing

2) y = f(t) is strictly decreasing

3) y - f(t) is decreasing

4) y - f(t) is increasing

Consider

x_i	5	6	8	11	13
f_i	4	8	2	3	9

$\rightarrow 26$

then mean deviation about mean is

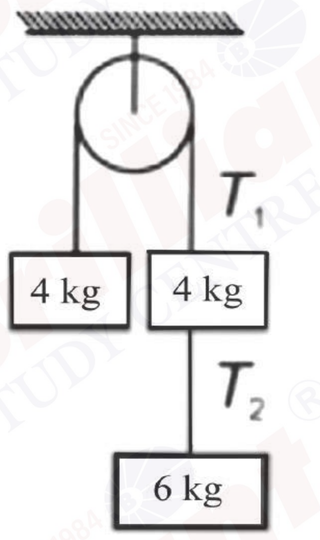
1) 4.23

2) 5.23

3) 2.32

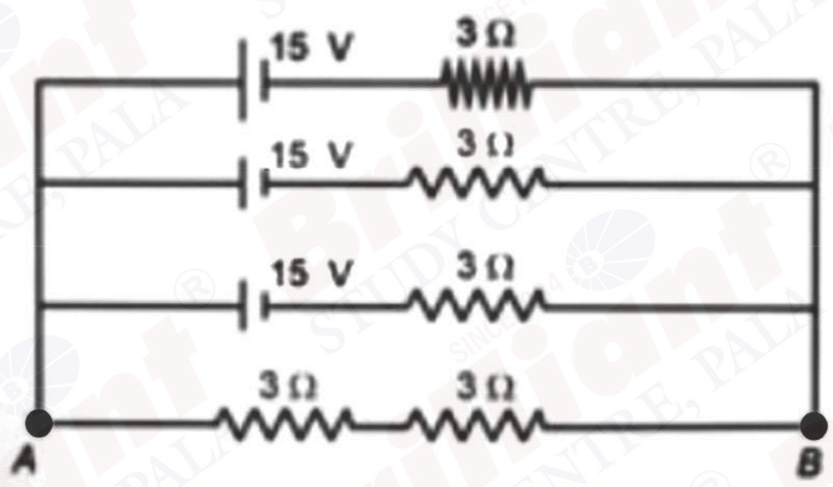
4) 3.23

1. As shown in the figure, the ratio of T_1 and T_2 is



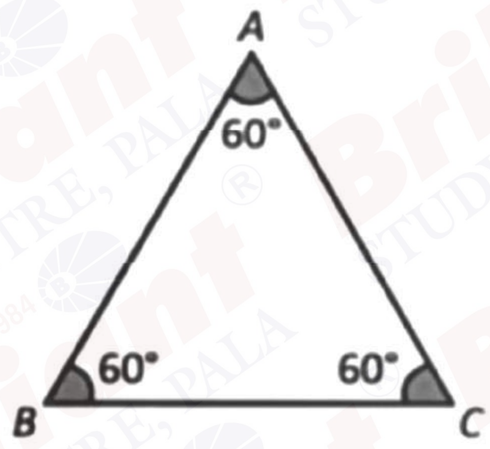
1) 5/3 2) 4 /3 3) 10/3 4) 6/3

2. For the circuit shown below, find current across AB (I_{AB})



1) 10/7 A 2) 13/7 A 3) 11/7 A 4) 15/ 7 A

3. Speed of light in the prism = 2×10^8 m/s. Then find minimum deviation through the prism.

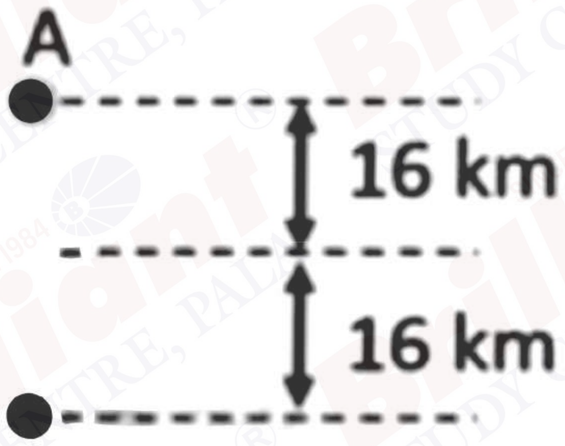


1) $2\sin^{-1}\left(\frac{3}{4}\right)-30°$ 2) $2\sin^{-1}\left(\frac{3}{4}\right)+30°$ 3) $2\sin^{-1}\left(\frac{3}{4}\right)+60°$ 4) $2\sin^{-1}\left(\frac{3}{4}\right)-60°$

4. Select the quantity with matching dimensions of $ML^2T^{-4}A^{-2}$

1) $\frac{R}{\sqrt{LC}}$ 2) $\frac{1}{R}\sqrt{\frac{L}{C}}$ 3) $\frac{R}{LC}$ 4) $\frac{C}{\sqrt{LR}}$

5. Two points, A and B are 16 km from surface of earth. Acceleration due to gravity at A and B is g_B and g_B, then g_A / g_B =

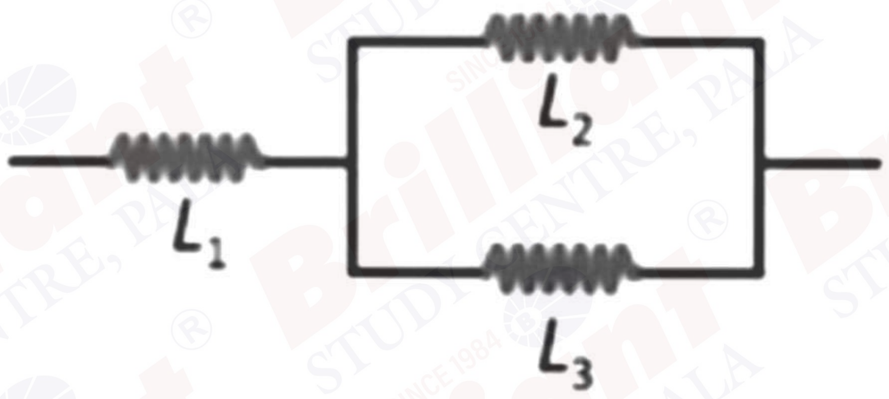


1) 1/2 2) 149/200 3) 398/399 4) 441/442

6. Young's modulus of wire is Y. Keeping material same, if radius of wire is doubled while length is halved. Then new value of Young's modulus is

1) 2Y 2) 4Y 3) Y 4) Y/2

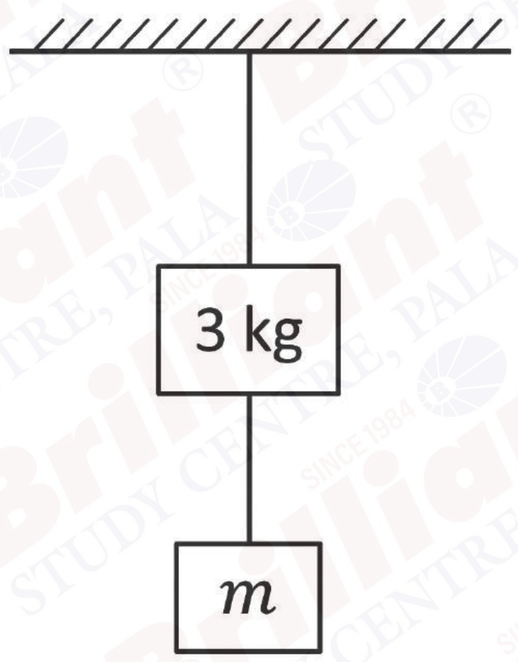
7. In circuit given below, $L_1 = L_2 = L_3$ & total energy stored in system is E_1 & energy stored in L_2 is E_2. Then find $\frac{E_1}{E_2}$



1) 6 2) 4 3) 1 4) 3

8. In a YDSE setup in air, fringe width is 2.4 μm. If we submerge the setup in a liquid of refractive index 1.2, then find the new fringe width (in μm).

9. Breaking stress of both wires is 1.2×10^8 N/m^2, area of cross-section of both wire is 0.008 cm^2. Find maximum value of m such that no wires breaks. (g = 10 m/s^2)



1) 4.1 kg 2) 6.6 kg 3) 8.7 kg 4) 9 kg

10. In a region where electric field exist as $-E_{0_1}\cdot(V/m)$. Initial (at t =0) velocity of particle of mass m is $4V_{0_1}$, $\lambda_0 = \dfrac{h}{4mv_0}$ at instant t = 0, then find λ in terms of λ_0 at time instant t.

1) $\lambda = \dfrac{h}{h + qE_0\lambda_0 t}$ 2) $\lambda = \dfrac{h\lambda_0}{h - qE_0\lambda_0 t}$ 3) $\lambda = \dfrac{h\lambda_0}{(h + 2E_0 q\lambda_0 t)}$ 4) $\lambda = \dfrac{h\lambda_0}{\left(h + \dfrac{qE_0\lambda_0 t}{2}\right)}$

11. Moment of inertia of rod about an axis passing through point at distance $\dfrac{\ell}{4}$ from centre and perpendicular to rod is (The uniform rod is of mass m and length ℓ)

1) $\dfrac{8}{63}m\ell^2$ 2) $\dfrac{3}{7}m\ell^2$ 3) $\dfrac{7}{44}m\ell^2$ 4) $\dfrac{7}{48}m\ell^2$

12. For a wave, equation is given as y = 3 sin (ωt – 0.01 8x+ π/4). Find the minimum distance between consecutive crest.

1) $\dfrac{200}{3}\pi(m)$ 2) $\dfrac{4000}{3}\pi(m)$ 3) $\dfrac{1000}{9}\pi(m)$ 4) $\dfrac{500}{9}\pi(m)$

13. In thermodynamics, with usual symbols two expressions are given

Expression 1 = $\Delta U = \mu C_v \Delta T + \dfrac{\mu R \Delta T}{\gamma - 1}$

Expression 2 = $\gamma f = f + 2$

Then

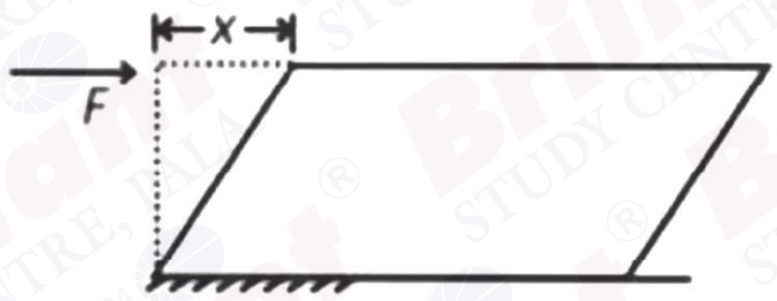
1) E1 is correct and E2 is incorrect 2) E1 is incorrect and E2 is correct

3) E1, E2 are correct 4) E1, E2 are incorrect

14. A ball is dropped from 18 m high tower. Find distance of ball from ground when the speed of ball becomes equal to magnitude of acceleration of ball (g = 10 m/s^2)

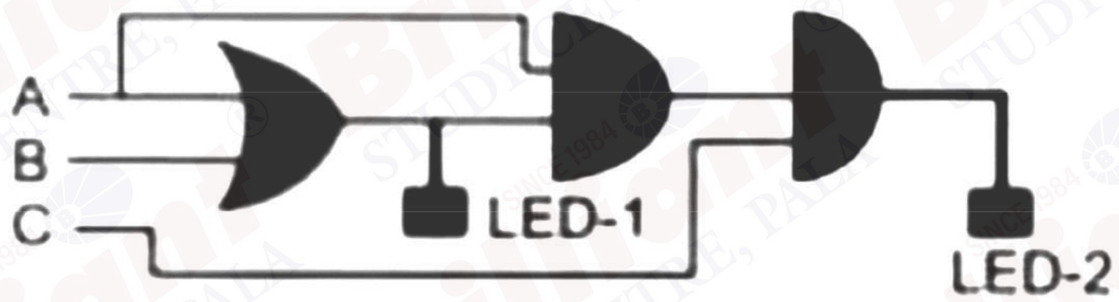
1) 8 2) 18 3) 13 4) 10

15. On the top surface of a cube (length = 5cm) force F is acting tangentially. Lower surface is fixed, then find shifting x. [Modulus of rigidity η = 10^5 (SI unit)



1) $x = \dfrac{F}{2500}$ 2) $x = \dfrac{F}{5000}$ 3) $x = \dfrac{F}{4000}$ 4) $x = \dfrac{F}{8000}$

16. Both LED's will switch ON in which of the following option



1)

A	B	C
1	1	0

2)

A	B	C
1	0	0

3)

A	B	C
1	0	1

4)

A	B	C
0	1	1

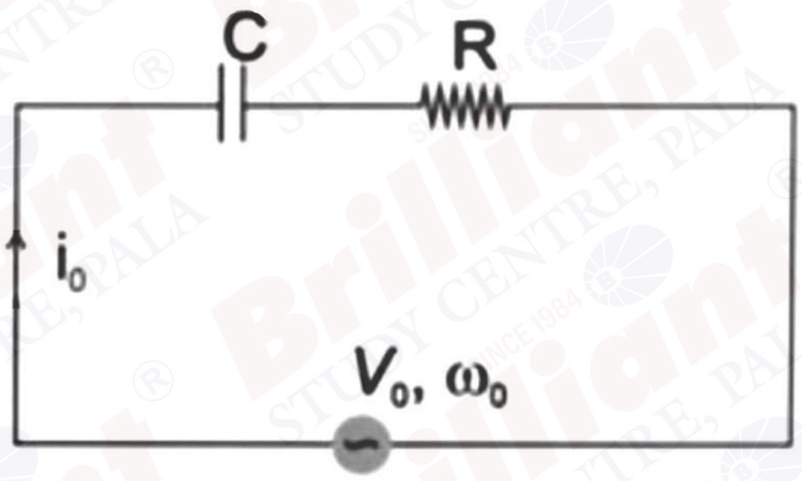
17. VSD matches with 9 MSD in vernier calliper. 1 MSD is of 1 mm. When no reading is taken, the zero of vernier scale is just right of zero of main scale and 7^{th} VSD matches with one MSD then zero error is

1) 0.7 cm, +ve 2) 0.7 cm, –ve 3) 0.7 mm,–ve 4) 0.7 mm, +ve

18. Hydrogen atom an electron is revolving in 4^{th} Bohr's orbit. Find wavelength of the incident radiation to excite this electron to 16^{th} Bohr's orbit. [Use hc = 1240 nm. eV]

1) 1556 nm 2) 400 nm 3) 800 nm 4) 2000 nm

19. In circuit given below, current in circuit is i_0. If angular frequency is changed from ω_0 to $\omega_0/8$, the current becomes $i_0/4$. Find $\frac{1}{\omega_0 CR}$.



1) $\sqrt{\frac{5}{16}}$ 2) $\sqrt{\frac{42}{13}}$ 3) $\sqrt{\frac{51}{38}}$ 4) $\sqrt{\frac{3}{2}}$

20. A particle moving uniformly enters a region having uniform magnetic field $\left(3\hat{i}+2\hat{j}\right)T$. Its acceleration is $\left(4\hat{i}+\frac{x}{2}\hat{j}\right)m/s^2$. Find the value of x.