ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)
path to success

DISTANCE LEARNING PROGRAMME
(Academic Session : 2019 - 2020)

PRE-MEDICAL : LEADER TEST SERIES / JOINT PACKAGE COURSE
TARGET : PRE-MEDICAL 2020

Test Type : **MAJOR TEST # 05** Test Pattern : **NEET(UG)**

TEST DATE : 22 - 08 - 2020

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	4	1	3	2	2	1	4	1	4	1	2	4	4	1	1	1	1	2	1	1
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	2	4	1	3	1	1	4	3	3	4	3	1	2	4	3	3	2	1	1	3
Que.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	2	3	4	1	3	2	3	1	3	2	4	4	2	4	3	3	1	4	4	2
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans.	4	4	2	2	3	2	2	1	3	3	1	3	4	3	3	4	1	4	1	2
Que.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ans.	2	3	4	1	4	3	3	4	2	4	3	3	4	2	3	3	4	1	3	2
Que.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans.	4	2	2	2	3	4	1	4	1	2	2	4	2	3	3	1	4	1	3	3
Que.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Ans.	3	2	4	3	2	1	1	4	1	4	2	4	1	2	4	4	1	1	2	1
Que.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Ans.	4	3	2	2	3	4	3	2	3	3	3	1	3	4	1	4	1	3	4	4
Que.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Ans.	4	1	3	3	3	3	3	4	2	3	2	3	1	4	2	4	1	1	4	4

HINT – SHEET

1. Among the given physical quantities angle has a unit but no dimensions. Angle = $[M^0L^0T^0]$
The SI unit of angle is radian

2. For a source S_1, Wavelength, $\lambda_1 = 5000Å$
Number of photons emitted per second, $N_1 = 10^{15}$

Energy of each photon, $E_1 = \dfrac{hc}{\lambda_1}$

Power of source S_1, $P_1 = E_1N_1 = \dfrac{N_1hc}{\lambda_1}$

For a source S_2, Wavelength $\lambda_2 = 5100Å$
Number of photons emitted per second, $N_2 = 1.02 \times 10^{15}$

Energy of each photons, $E_2 = \dfrac{hc}{\lambda_2}$

Power of source S_2, $P_2 = N_2E_2 = \dfrac{N_2hc}{\lambda_2}$

$$\therefore \frac{\text{Power of } S_2}{\text{Power of } S_1} = \frac{P_2}{P_1} = \frac{\dfrac{N_2hc}{\lambda_2}}{\dfrac{N_1hc}{\lambda_1}} = \frac{N_2\lambda_1}{N_1\lambda_2}$$

$$= \frac{(1.02\times10^{15}\text{ photons/s})\times(5000\times10^{-10})}{(10^{15}\text{photons/s})\times(5100\times10^{-10})} = \frac{51}{51} = 1$$

3. Resistance of the circuit,

$R = R_1 + R_2 + 40\Omega + 40\Omega = 80\Omega$

Impedance of the circuit,

$$Z = \sqrt{R^2 + (X_L - X_C)^2} = \sqrt{(80)^2 + (100-40)^2}$$

$$= \sqrt{(80)^2 + (60)^2} = 100\Omega$$

Power factor, $\cos\phi = \frac{R}{Z} = \frac{80}{100} = 0.8$

4. Let ε be emf and r be internal resistance of the battery.

In first case, $12 = \varepsilon - 2r$ ...(i)

In second case, $15 = \varepsilon + 3r$ ...(ii)

Substract (ii) from (i), we get, $r = \frac{3}{5}\Omega$

Putting this value of r in equation (i), we get

$$\varepsilon = 12 + \frac{2\times 3}{5} = \frac{60+6}{5} = \frac{66}{5} = 13.2\text{V}$$

5. $x = 2A\cos\omega t + A\cos\left(\omega t + \frac{\pi}{2}\right) + A\cos(\omega t + \pi)$

$$+ \frac{A}{2}\cos\left(\omega t + \frac{3\pi}{2}\right)$$

$$= 2A\cos\omega t - A\sin\omega t - A\cos\omega t + \frac{A}{2}\sin\omega t$$

$$= A\cos\omega t - \frac{A}{2}\sin\omega t$$

$\therefore$ The amplitude of the resultant motion is

$$A_R = \sqrt{(A)^2\left(-\frac{A}{2}\right)^2} = \frac{\sqrt{5}A}{2}$$

6. The object will slip if centripetal force $\geq$ force of friction

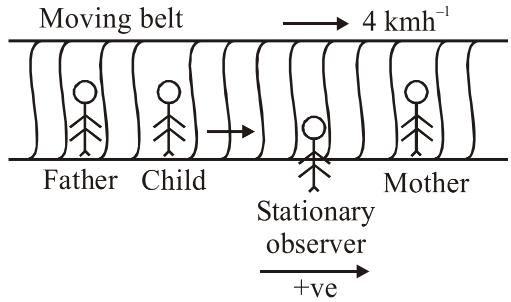
$mr\omega^2 \geq \mu mg$

$r\omega^2 \geq \mu g$

$r\omega^2 \geq$ constant, or $\left(\frac{r_1}{r_2}\right) = \left(\frac{\omega_2}{\omega_1}\right)^2$

$$\frac{4\text{cm}}{r_2} = \left(\frac{2\omega}{\omega}\right)^2 \quad \therefore r_2 = 1 \text{ cm}$$

7. Figure shows conditions of the question.



In this case,

Speed of belt w.r.t. ground $\therefore v_{BC} = 4$ km h^{-1}

Speed of child w.r.t. belt $\therefore v_{CB} = 9$ km h^{-1}

$\therefore$ For an observer on a stationary platform, speed of child running in the direction of motion of the belt is

$$v_{CG} = v_{CB} + v_{BG} = 9 \text{ km h}^{-1} + 4 \text{ km h}^{-1} = 13\text{km h}^{-1}$$

8. We know that $r_n \propto n^2$ or $\left(\frac{r_n}{r_1}\right) = n^2$

So, $\log\left(\frac{r_n}{r_1}\right) = 2\log n$

Hence, the graph between $\log\left(\frac{r_n}{r_1}\right)$ and $\log n$ will be a straight line passing through origin. The positive slope is given by $\tan\theta = 2$.

9. Apparent depth of the dot

$$= \frac{h}{3\mu_1} + \frac{h}{3\mu_2} + \frac{h}{3\mu_3} = \frac{h}{3}\left[\frac{1}{\mu_1} + \frac{1}{\mu_2} + \frac{1}{\mu_3}\right]$$

10. $I_G = \frac{50}{5} = 10\text{mA}$; $R_G = 40\Omega$, $R_S = 2\Omega$

Maximum current,

$$I = \frac{R_G + R_S}{R_S} \times I_G = \frac{(40+2)\times 10}{2} = 210 \text{ mA}$$

11. No. of beats per second $= \frac{9}{3} = 3 \text{ s}^{-1}$

No. of beats per second $= \upsilon_1 - \upsilon_2$

$$3 = \frac{v}{\lambda_1} - \frac{v}{\lambda_2} = v\left[\frac{1}{\lambda_1} - \frac{1}{\lambda_2}\right]$$

$$\frac{3}{300}=\frac{1}{2}-\frac{1}{\lambda_2}$$

$$\frac{1}{\lambda_2}=\frac{1}{2}-\frac{1}{100}=\frac{50-1}{100}=\frac{49}{100}$$

$$\lambda_2 = \frac{100}{49} = 2.04 \text{ m}$$

12. Bulk modulus, $B = \dfrac{P}{\Delta V / V}$

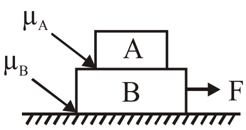
$\therefore$ Fractional change in volume, $\dfrac{\Delta V}{V}=\dfrac{P}{B}$

Here, $P = 10$ atm $= 10 \times 1 \times 10^5$ N m^{-2}

$B = 37 \times 10^9$ N m^{-2}

$$\therefore \frac{\Delta V}{V}=\frac{1\times10^6 \text{N m}^{-2}}{37\times10^9 \text{N m}^{-2}} = 0.027 \times 10^{-3}$$

$= 2.7 \times 10^{-5}$

13. 

Here, $m_A = \dfrac{m}{2}$, $m_B = m$

$\mu_A = 0.2$, $\mu_B = 0.1$

Let both the blocks are moving with common acceleration a. Then,

$$a = \frac{\mu_A m_A g}{m_A} = \mu_A g = 0.2 \text{ g}$$

and $F - \mu_B(m_B + m_A)g = (m_B + m_A)a$

$F = (m_B + m_A)a + \mu_B(m_B + m_A)g$

$$= \left(m+\frac{m}{2}\right)(0.2g)+(0.1)\left(m+\frac{m}{2}\right)g$$

$$= \left(\frac{3}{2}m\right)(0.2g)+\left(\frac{3}{2}m\right)(0.1g)=\frac{0.9}{2}mg$$

$= 0.45$ mg

14. Let the number of fissions per second be n.

Energy released per second

$= n \times 200$ MeV $= n \times 200 \times 1.6 \times 10^{-13}$J

Energy required per second = power × time

$=$ 1 kW × 1 s = 1000 J

$\therefore$ $n \times 200 \times 1.6 \times 10^{-13} = 1000$

$$\text{or } n = \frac{1000}{3.2\times10^{-11}}=\frac{10}{3.2}\times10^{13}=3.125\times10^{13}$$

15. Let f_o and f_e be the focal lengths of the objective and eye piece respectively.

For normal adjustment, distance from the objective to the eye piece (tube length) $= f_o + f_e$.

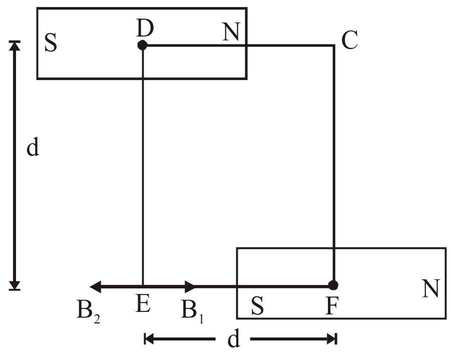
Treating the line on the objective as the object, and the eye piece as the lens, $u = -(f_o + f_e)$ and $f = f_e$.

$$\therefore \frac{1}{v}=\frac{1}{f_e}-\frac{1}{f_o+f_e}=\frac{f_o}{(f_o+f_e)f_e}$$

$$\text{or, } v=\frac{(f_o+f_e)f_e}{f_o}$$

$$\text{Magnification} = \left|\frac{v}{u}\right|=\frac{f_e}{f_o}=\frac{\text{image size}}{\text{object size}}=\frac{I}{O}.$$

$\therefore$ $\dfrac{f_o}{f_e}=\dfrac{L}{l}$ = magnification of telescope in normal adjustment.

16. 

Magnetic induction at point E due to magnet at F (axial point) is

$$B_1 = \frac{\mu_0}{4\pi}\frac{2m}{d^3}$$

It acts along EF.

Magnetic induction at point E due to magnet at D (equatorial point) is

$$B_2 = \frac{\mu_0}{4\pi}\frac{m}{d^3}$$

It acts along FE.

Resultant magnetic induction at point E is

$$B = B_1 - B_2 = \frac{\mu_0 m}{4\pi d^3}$$

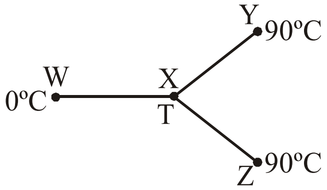
17. Potential energy of system

$$U = \frac{1}{4\pi\varepsilon_0}\frac{q_1q_2}{r}$$

$$0.5 \times 10^{-6} = \frac{9\times10^9\times5\times10^{-9}\times(-2)\times10^{-9}}{(x-2)\times10^{-2}}$$

$\Rightarrow$ x = 20 cm.

18. Let T be the temperature at the junction.
Let L and A be the length and area of cross-section of each rod respectively.



$\therefore$ Heat current from Y to X is

$$H_1 = \frac{KA(90°C - T)}{L}$$

Heat current from Z to X is

$$H_2 = \frac{KA(90°C - T)}{L}$$

Heat current from X to W is

$$H_3 = \frac{KA(T - 0°C)}{L}$$

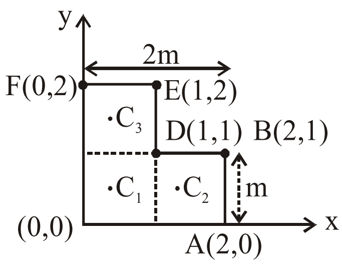
At the junction X,

$H_1 + H_2 = H_3$

$\therefore$ 90°C – T + 90°C – T = T

or 3T = 180°C or T = 60°C

19. Choosing the x and y axes as shown in the figure. The coordinates of the vertices of the L-shaped lamina is as shown in the figure. Divide the L-shape lamina into three squares each of side 1m and mass 1 kg ($\because$ the lamina is uniform). By symmetry, the centres of mass C_1, C_2 and C_3 of the squares are their geometric centres and have coordinates



$C_1\left(\frac{1}{2},\frac{1}{2}\right), C_2\left(\frac{3}{2},\frac{1}{2}\right)$ and $C_3\left(\frac{1}{2},\frac{3}{2}\right)$ respectively.

The coordinates of the centre of mass of the L-shaped lamina is

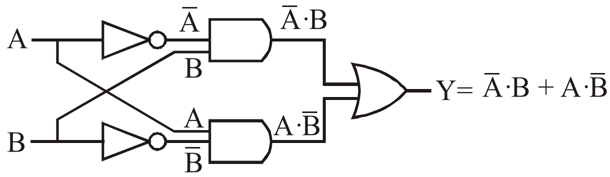
$$X_{CM} = \frac{m_1x_1 + m_2x_2 + m_3x_3}{m_1 + m_2 + m_3}$$

$$= \frac{1\times\frac{1}{2} + 1\times\frac{3}{2} + 1\times\frac{1}{2}}{1+1+1} = \frac{5}{6}m$$

$$Y_{CM} = \frac{m_1y_1 + m_2y_2 + m_3y_3}{m_1 + m_2 + m_3}$$

$$= \frac{1\times\frac{1}{2} + 1\times\frac{1}{2} + 1\times\frac{3}{2}}{1+1+1} = \frac{5}{6}m$$

20.



$Y = \bar{A}\cdot B + A\cdot\bar{B}$

The truth table for the given logic circuit is

A	B	$\bar{A}$	$\bar{B}$	$\bar{A}\cdot B$	$A\cdot\bar{B}$	$Y = \bar{A}\cdot B + A\cdot\bar{B}$
0	0	1	1	0	0	0
0	1	1	0	1	0	1
1	0	0	1	0	1	1
1	1	0	0	0	0	0

21. Fresnel distance, $z_F = \frac{a^2}{\lambda} = \frac{\left(4\times10^{-3}\right)^2}{500\times10^{-9}}$

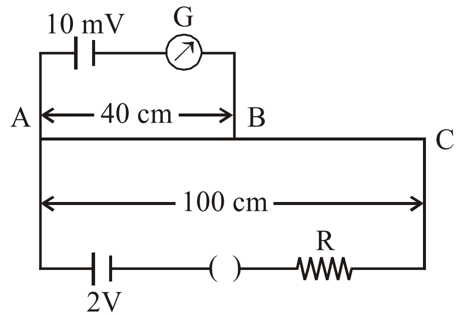
$\therefore$ z_F = 32 m

22. Here, V_P = 11000 V, V_S = 220 V

N_P = 6000, η = 60%; P_O = 9 kW = 9 × 10^3 W

$$\text{Efficiency, } \eta = \frac{\text{Output power}}{\text{Input power}} = \frac{P_O}{P_i}$$

$$\therefore\ P_i = \frac{P_O}{\eta} = \frac{9\times10^3}{60/100} = 1.5\times10^4 = 15\text{ kW}$$

23. 

The current in the potentiometer wire AC is

$$I = \frac{2}{10+R}$$

The potential difference across the potentiometer wire is V = current × resistance

$$= \frac{2}{10+R} \times 10$$

The length of the wire is l = 100 cm

So, the potential gradient along the wire is

$$K = \frac{V}{t} = \left(\frac{2}{10+R}\right) \times \frac{10}{100} \qquad \text{...(i)}$$

The source of emf 10 mV is balanced against a length of 40 cm of the potentiometer wire i.e. $10 \times 10^{-3} = k \times 40$

or $10 \times 10^{-3} = \frac{2}{(10+R)} \times \frac{40}{10}$ (Using (i))

or $R = 790\Omega$.

24. For a monatomic gas like helium $\gamma_{He} = \frac{5}{3}$

For a diatomic gas like oxygen $\gamma_{O_2} = \frac{7}{5}$

$$C_{P_{mix}} = C_{V_{mix}} + R = \frac{31R}{10}$$

$$C_{V_{mix}} = \frac{3 \times C_{V_{O_2}} + 2 \times C_{V_{He}}}{3+2}$$

$$C_{V_{mix}} = \frac{3 \times \frac{5R}{2} + 2 \times \frac{3R}{2}}{5} \Rightarrow \frac{21R}{10}$$

$$\gamma_{mix} = \frac{31}{21} = 1.47$$

25. $\omega = \omega_0 + \alpha t$ or $\omega = 0 + \alpha t$

or $\alpha = \frac{\omega}{t} = \frac{15}{0.270}$ rad s^{-2}

$\therefore$ $a = r\alpha = 0.81 \times \frac{15}{0.270} = 45$ m s^{-2}

26. Here, $a = g - bv$

When an object falls with constant speed v_c, its acceleration becomes zero.

$\therefore$ $g - bv_c = 0$ or $v_c = \frac{g}{b}$

27. Radius of the circular path of a charged particle in a magnetic field is given by

$$R = \frac{mv}{Bq} \text{ or } mv = RBq$$

Here, $R = 0.83$ cm $= 0.83 \times 10^{-2}$m

$B = 0.25$ Wb m^{-2}

$q = 2e = 2 \times 1.6 \times 10^{-19}$C

$\therefore$ $mv = (0.83 \times 10^{-2})(0.25)(2 \times 1.6 \times 10^{-19})$

de Broglie wavelength,

$$\lambda = \frac{h}{mv} = \frac{6.6 \times 10^{-34}}{0.83 \times 10^{-2} \times 0.25 \times 2 \times 1.6 \times 10^{-19}}$$

$= 0.01$Å

28. In an electromagnetic wave both electric and magnetic vectors are perpendicular to each other as well as perpendicular to the direction of propagation of wave.

29. In absence of magnetic field the weight added in one pan balances the rectangular coil in the other pan of balance,

$\therefore$ $Mgl = W_{coil}\, l$ or $W_{coil} = Mg = 0.5 \times 9.8$ N

When current I is passed through the coil and the magnetic field is switched on.

Let m mass be added in the first pan to regain the balance

Then $Mgl + mgl = W_{coil}\, l + IBL \sin 90° l$

$mgl = IBLl$

or $m = \frac{IBL}{g} = \frac{9.8 \times 0.4 \times 1.5 \times 10^{-2}}{9.8}$

$= 0.6 \times 10^{-2}$ kg $= 6 \times 10^{-3}$ kg $= 6$ g

30. $\lambda = 2(L_2 - L_1)$

$v = \nu\lambda$

Speed of sound

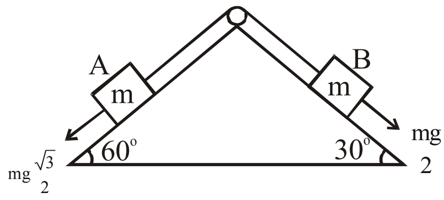
$v = 2\upsilon(L_2 - L_1) = 2 \times 256 \times (1.018 - 0.334)$

$= 2 \times 256 \times 0.684 = 350.2$ m s^{-1}

31. Gravitational potential on the surface of the shell is V = Gravitational potential due to particle (V_1) + Gravitational potential due to shell itself (V_2)

$$-\frac{Gm}{R}+\left(-\frac{G3m}{R}\right)=-\frac{4Gm}{R}$$

32.



$$a_{sys}=\frac{mg\left(\frac{\sqrt{3}}{2}-\frac{1}{2}\right)}{2m}$$

A slide downward.

33. $t_{\frac{1}{2}}=140$

$$A=A_0\left(\frac{1}{2}\right)^{t/t_{1/2}}$$

$$6000=(A_0)\left(\frac{1}{2}\right)^{\frac{280}{140}}=\frac{A_0}{4}$$

$A_0 = 24000$

34. As $\mu_2 > \mu_1$, the upper half of the lens will become diverging. And $\mu_1 > \mu_3$, the lower half of the lens will become converging.

35. For six layers of windings the total number of turns = 6 × 450 = 2700

Now number of turns per unit length

$$n=\frac{N}{l}=\frac{2700}{90\times10^{-2}}=3000$$

Then the field inside the solenoid near the centre]

$B = \mu_0 nI = 4\pi \times 10^{-7} \times 3000 \times 6$

$= 72\pi \times 10^{-4}T = 72\pi G$

36. Here, distance of point from the centre of the sphere, r = 20 cm = 0.2 m

Electric field, $E = -1.2 \times 10^3$ N C^{-1}

As $E=\frac{q}{4\pi\varepsilon_0 r^2}$

$\therefore\ q = (4\pi\varepsilon_0 r^2)\,E = \frac{(0.2)^2\times(-1.2\times10^3)}{9\times10^9}$

$= -5.3 \times 10^{-9}$ C

37. The velocity of outflow of water remains unchanged because it depends upon the height of water level and is independent of the size of the hole. The volume depends directly on the size of the hole.

38. Volume of wind flowing per second = Av

Mass of wind flowing per second = Avρ

Mass of air passing in time t is = Avρt

39. As, $I_E=\frac{n_E\times e}{t}$

and $I_C=\frac{n_C\times e}{t}=\frac{(98/100)n_E\times e}{t}=\frac{98}{100}\times I_E$

Current transfer ratio,

$$\alpha=\frac{I_C}{I_E}=\frac{98}{100}=0.98$$

Current amplification factor,

$$\beta=\frac{\alpha}{1-\alpha}=\frac{0.98}{1-0.98}=49$$

$$\therefore\ \frac{\alpha}{\beta}=\frac{0.98}{49}=0.02$$

40. Here, $A_2 = 2A_1$

$\because$ Intensity $\propto$ (Amplitude)^2

$$\therefore\ \frac{I_2}{I_1}=\left(\frac{A_2}{A_1}\right)^2=\left(\frac{2A_1}{A_1}\right)^2=4$$

or $I_2 = 4I_1$

Maximum intensity, $I_m=\left(\sqrt{I_1}+\sqrt{I_2}\right)^2$

$$I_m=\left(\sqrt{I_1}+\sqrt{4I_1}\right)^2=\left(3\sqrt{I_1}\right)^2$$

$= 9I_1$ or $I_1=\frac{I_m}{9}$ ...(i)

Resultant intensity,

$I = I_1 + I_2 + 2\sqrt{I_1I_2}\cos\phi$

$= I_1 + 4I_1 + 2\sqrt{I_1(4I_1)}\cos\phi$

$= 5I_1 + 4I_1\cos\phi = I_1 + 4I_1 + 4I_1\cos\phi$

$= I_1 + 4I_1(1 + \cos\phi)$

$= I_1\left(1+8\cos^2\frac{\phi}{2}\right)$ $\left(1+\cos\phi=2\cos^2\frac{\phi}{2}\right)$

Putting the value of I_1 from eqn. (i), we get

$$I=\frac{I_m}{9}\left(1+8\cos^2\frac{\phi}{2}\right)$$

41. When a wire of irregular shape turns into a circular loop, are of the loop tends to increase. Thereforre, magnetic flux linked with the loop increases. According to Lenz's law, the direction of induced current must oppose the magnetic flux, for which induced current should flow along adcba.

42. Charge on capacitor plates without the dielectric is

$Q = CV = (5 \times 10^{-6}F) \times 1\ V = 5 \times 10^{-6}C = 5\ \mu C$

The capacitance after the dielectric is introduced is

$$C' = \frac{\varepsilon_0 A}{d - \left(t - \frac{t}{K}\right)} = \frac{\varepsilon_0 A/d}{1 - \left(\frac{t - \frac{t}{K}}{d}\right)}$$

$$= \frac{C}{1 - \left(\frac{t - \frac{t}{K}}{d}\right)} = \frac{5\mu F}{1 - \left(\frac{4cm - \frac{4cm}{4}}{6cm}\right)}$$

$$= \frac{5\mu F}{1 - \left(\frac{4-1}{6}\right)} = 10\ \mu F$$

$\therefore$ Charge on capacitor plates now will be

$Q' = C'V = 10\ \mu F \times 1\ V = 10\ \mu C$

Additional charge transferred

$= Q' - Q = 10\ \mu C - 5\ \mu C = 5\ \mu C$

43. Here, $\eta_1 = 1 - \frac{T_2}{T_1}$

or $0.25 = 1 - \frac{T_2}{T_1} \Rightarrow \frac{1}{4} = 1 - \frac{T_2}{T_1}$

$$\frac{T_2}{T_1} = 1 - \frac{1}{4} = \frac{3}{4} \qquad ...(i)$$

According to question,

$\Delta T = 58°C = 58\ K$

$\eta_2 = 2\eta_1$, and $T_2 = (T_2 - 58)K$

$$\therefore\ 2 \times \frac{1}{4} = 1 - \frac{(T_2 - 58)}{T_1}$$

$$\Rightarrow\ 1 - \frac{1}{2} = \frac{T_2 - 58}{T_1}$$

$$\frac{1}{2} = \frac{T_2}{T_1} - \frac{58}{T_1} \Rightarrow \frac{3}{4} - \frac{1}{2} = \frac{58}{T_1}$$

$\Rightarrow T_1 = 232\ K$

44. Here, $\vec{r} = \hat{i} - \hat{j} + \hat{k},\ \vec{F} = 7\hat{i} + 3\hat{j} - 5\hat{k}$

Torque, $\vec{\tau} = \vec{r} \times \vec{F}$

$$\vec{\tau} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & -1 & 1 \\ 7 & 3 & -5 \end{vmatrix} = \hat{i}(5-3) + \hat{j}(7-(-5)) + \hat{k}(3-(-7))$$

or $\vec{\tau} = 2\hat{i} + 12\hat{j} + 10\hat{k}$

45. For forward biasing, $\Delta V = 2.4 - 2.0 = 0.4V$

$\Delta I = 80 - 60 = 20\ mA$

$$\therefore\ r_{fb} = \frac{\Delta V}{\Delta I} = \frac{0.4}{20 \times 10^{-3}} = 20\Omega$$

For reverse biasing, $\Delta V = -2 - 0 = -2V$

$\Delta I = -0.25 - 0 = -0.25\ \mu A$

$$r_{fb} = \frac{-2}{-0.25 \times 10^{-6}} = 8 \times 10^6 \Omega$$

48. Enzymes are proteins in nature.

51. Hypophosphorous Acid H_3PO_2 is a monobasic Acid.

54. NCERT-XII, Part-II, Page # 445

65. $C_nH_{2n+2} + \left(\frac{3n+1}{2}\right)O_2 \longrightarrow nCO_2 + (n+1)H_2O$

NCERT XI, part-II ; Pg. # 373

73. NCERT XII / Part II / Page - 375

79. NCERT XI II part Pg.# 408

85. NCERT XII II part Pg.# 428

91. NCERT XI Eng. Pg.no. # 103-104

93. NCERT Pg. # 70, 71

95. NCERT XI Eng. Pg.no. # 79

96. NCERT (XI) Pg. # 249

98. NCERT-Eng, Pg. # 52

99. NCERT (XIIth) Pg. # 140,141

102. NCERT (XIIth) Pg. # 70

105. NCERT (XI) Pg. # 233

106. NCERT (XIIth) Pg. # 117

113. NCERT XI, Pg.no.# 32,33 Para-3.1.1,3.1.2,313

115. NCERT-XI (E), Para.-3, Page#299
NCERT-XI (H), Para.-3, Page#299

124. NCERT XI, Pg.no.# 36, Para-3.3

125. NCERT (XIIth) Pg. # 7

133. NCERT (XIth) Pg. # 168,169; para-2,3,4,1

135. NCERT XIIth Pg.#167,168

142. NCERT (XIth) Pg. # 133,134,138,140; para-5,5,4,2

143. NCERT (XI) Pg. # 202

146. NCERT XI Eng. Pg.no. # 85 Para 1 Pg.no. # 84 Para 3 Pg.no. # 86 Para 3 line 1,2

149. NCERT (XIIth) Pg. # 51

153. NCERT -XI (E), Para.-2, Page#345
NCERT-XI (H), Para.-3, Page#346

159. NCERT (XIIth) Pg. # 137

163. NCERT (XIIth) Pg. # 31

165. NCERT XI Eng. Pg.no. # 80

169. NCERT (XIth) Pg. # 38, Para 3.4 and diagram at Pg. 39

171. NCERT XI Eng. Pg.no. # 103 (Para-2)

177. NCERT (XIth) Pg. # 19

178. NCERT (XII) Pg. # 24, 36