

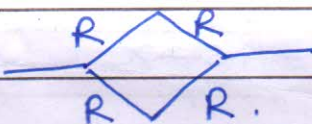
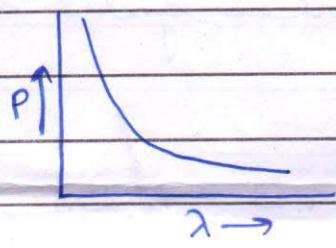
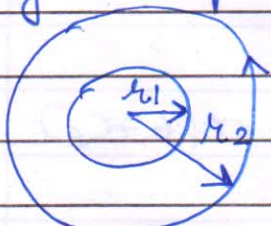
EXAM

Pre Board - 2 (2015-2016) Examination

Subject: Physics Class: XII

Marking Scheme.

Time allowed..... Max. Marks.....

S. No.		Marks Q wise
1.	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">R</div>  </div>	
2.	<p>$T = \frac{1}{50}$ s</p> <p>Current will take $T/4$ s to reach its peak value. So $t = T/4 = \frac{1}{4} \times \frac{1}{50} = \frac{1}{200}$ second.</p>	
3.		
4.	$V = 4V$	
5.	<p>MTSO - Mobile Telephone Switching Office.</p> <p>When a mobile user moves from one cell zone to another cell zone, MTSO of its own switches mobile phone link to new cell antenna.</p>	
6.	<p>$\int \vec{B} \cdot d\vec{S} = 0$</p> <p>Monopoles do not exist</p> <p>The most fundamental magnetic element is a mag dipole of current loop.</p>	
7.	<p>Diamagnetic ^{Or}</p> <p>Any two properties</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">  </div> <div> <p>$B_2 = \frac{\mu_0 I_2}{2r_2}$</p> <p>$\phi_1 = B_2 \pi r_1^2$</p> <p>$= \pi r_1^2 \times \frac{\mu_0 I_2}{2r_2}$</p> <p>$\phi_1 = \left(\frac{\mu_0 \pi r_1^2}{2r_2} \right) I_2 = \frac{\mu_0 \pi r_1^2}{2r_2} I_2$</p> <p>where $M_{12} = M_{21}$</p> </div> </div>	

S.
No.

8. Let 'd' be the real distance of the bubble from the first face.

$$\mu_g = x/2$$

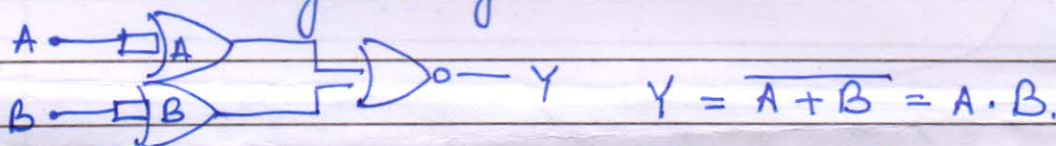
In second case; $\mu_g = \frac{4.5 - x}{4}$

$$\therefore x/2 = \frac{4.5 - x}{4} \Rightarrow x = 3 \text{ cm}$$

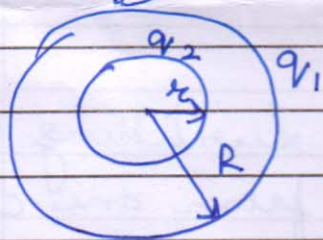
$$\mu_g = 3/2 = 1.5.$$

9. Diag & its two advantages

10. NOR gate is called universal gate because AND, OR and NOT all the three gates can be realized by using it.



11.



$$\sigma = \frac{q_1}{4\pi R^2} = \frac{q_2}{4\pi k^2}$$

$$V_1 = \frac{kq_1}{R} \quad V_2 = \frac{kq_2}{k}$$

$$V = V_1 + V_2 = \frac{1}{4\pi\epsilon_0} \left[\frac{q_1}{R^2} + \frac{q_2}{k^2} \right]$$

$$= \frac{1}{\epsilon_0} \left[\frac{q_1 R}{4\pi R^2} + \frac{q_2 k}{4\pi k^2} \right]$$

$$= \frac{1}{\epsilon_0} [\sigma R + \sigma k] = \frac{\sigma}{\epsilon_0} [R + k].$$

12. derivation of $U = -pE[\cos\theta_2 - \cos\theta_1]$

(i) $U = -pE$ in same dielectric slab

(ii) $U = pE$ Unsuitable

I Case

$$Q_1 = 40C_A = 60C_B$$

$$\frac{C_A}{C_B} = \frac{3}{2}$$

Or

II Case

$$Q_2 = 50C_A = 50(6 + C_B)$$

$$C_A - C_B = 6.$$

$$\therefore C_A = 18\mu F \quad C_B = 12\mu F$$

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Subject..... Class.....

Time allowed.....

Max. Marks.....

S. No.		Marks Q wise
13.	$R_1 = R_2$ $\rho_1 \frac{l_1}{A_1} = \rho_2 \frac{l_2}{A_2}$ $\frac{A_1}{A_2} = \frac{\rho_1}{\rho_2} = \frac{2.63 \times 10^{-8}}{1.72 \times 10^{-8}} = 1.53$ $\therefore \frac{m_1}{m_2} = \frac{(A_1 l_1) d_1}{(A_2 l_2) d_2} = 1.53 \frac{d_1}{d_2}$ $= 1.53 \times \frac{2.7}{8.9} = .46$ $\frac{m_2}{m_1} = 2.16$ <p>\therefore Cu wire is 2.16 times heavier than Al.</p> <p>Al. is lighter than Cu \therefore used for power transmission lines</p>	
14.	<p>Principle</p> $\text{Cyclotron freq} = \frac{qB}{2\pi m}$ <p>Limitations</p>	
15.	<p>Resistance - opposition offered towards the flow of current.</p> <p>Reactance - opposition offered by a component of the ckt which depends upon frequency of current</p> <p>Impedance - combined effect of frequency dependent & frequency independent opposition offered by the components of a ckt towards the flow of current.</p>	

