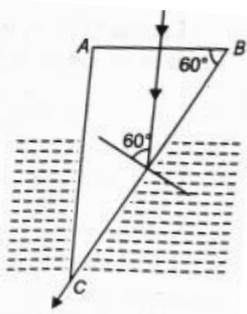
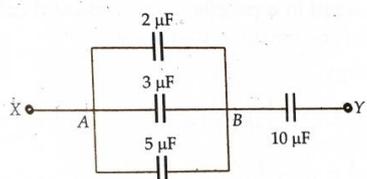


KENDRIYA VIDYALAYA SANGATHAN ERNAKULAM REGION**CODE NUMBER: 12PB25PHY04****PRE-BOARD EXAMINATION 2025-26****CLASS: XII****SUBJECT: PHYSICS (042)****MARKING SCHEME**

Q. No	Value Points	Marks
SECTION-A		
1	C	1
2	D	1
3	A	1
4	B	1
5	D	1
6	C	1
7	C	1
8	B	1
9	B	1
10	A	1
11	A	1
12	D	1
13	A	1
14	B	1
15	A	1
16	C	1
SECTION-B		
17	(i) Force at the centre of the shell = 0 Force on the charge 2Q kept at A , $F = \frac{3Q^2}{4\pi\epsilon_0 r^2}$	1/2 1/2
	(ii) Electric flux through the shell = $\frac{Q}{2\epsilon_0}$	1

23	Correct derivation on the axial line Expression for magnetic field at the centre	2 1
24	Derive, $e = -Blv$	3
25	<p>The ray of light is going from glass to liquid.</p> <p>Now,</p> $i\mu_g = i\mu_a \times a\mu_g = \frac{a\mu_g}{a\mu_l} = \frac{3/2}{a\mu_l}$ $i\mu_g = \frac{1}{\sin i_c}$ $\therefore \frac{3}{2(a\mu_l)} = \frac{1}{\sin 60^\circ} = \frac{2}{\sqrt{3}}$ $\therefore a\mu_l = \frac{3}{2} \times \frac{\sqrt{3}}{2} = \frac{3\sqrt{3}}{4} = 1.3$	 1 1 1
26	Huygen's principle Correct diagram Derivation of Snell's law	1 1 1
27	$E = hc/\lambda = 4.5 \text{ eV}$ Transition B will result in the emission of photon of wavelength 275 nm	2 1
28	Correct diagram explanation	$1\frac{1}{2}$ $1\frac{1}{2}$
SECTION-D		
29	I. B II. C III. B IV. C	1 1 1 1
30	I. When temperature increases in a semiconductor, the conductivity of the semiconductor increases as more electrons gains energy to cross the energy gap. II. Insulator III. Zero	2 1 1
SECTION-E		
31(I)	(A) Correct derivation (B) On solving, effective capacitance , $C=20 \mu\text{F}$ \therefore Charge $q=CV - 2 \text{ mC}$	3 1 1
31(II)	(A) Correct derivaton (B) Equivalent circuit diagram On solving, equivalent capacitance , $C=5 \mu\text{F}$	 2 2

	<p>(C) Energy = $Q^2/2C$</p> <p>When separation is increased capacitance will increase and charge will remain same. Therefore energy stored in capacitor will decrease.</p>	1
32(I)	<p>(A) Correct derivation</p> <p>(B) (i) $I_0 = e_0/R = 7.07 \text{ A}$</p> <p>(iii) Power dissipated = $(200)^2/40 = 1000 \text{ W}$</p>	<p>3</p> <p>1</p> <p>1</p>
32(II)	<p>(A) Correct phasor diagram</p> <p>Correct derivation for Z</p> <p>(B) $e = \sqrt{V_R^2 + (V_L - V_C)^2} = \sqrt{80^2 + (100 - 40)^2} = 100 \text{ V}$</p> <p>$\text{Cos } \phi = \frac{V_R}{\sqrt{V_R^2 + (V_L - V_C)^2}} = 80/100 = 0.8$</p>	<p>1</p> <p>2</p> <p>1</p> <p>1</p>
33(I)	<p>(A) Correct ray diagram</p> <p>Magnifying power, $M = -f_o/f_e$</p> <p>Two limitations of refracting telescope over reflecting telescope</p> <p>(B) $u = +12 \text{ cm}, f = -16 \text{ cm}$</p> <p>$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$</p> <p>On solving, $v = 48 \text{ cm}$</p>	<p>$1\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>1</p> <p>1</p>
33(II)	<p>(A) Correct Ray diagram</p> <p>Correct derivation</p> <p>(B) $\frac{1}{f} = (n - 1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$</p> <p>$N=1.55, f=10 \text{ cm}, R_1=R, R_2=-R$</p> <p>On solving, $R = 11 \text{ cm}$</p>	<p>1</p> <p>2</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p>