

**ANSWER KEY**

Code No	SY 524
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Second YEAR HIGHER SECONDARY EXAMINATION MARCH 2023

PART-I/II/III

SUBJECT: PHYSICS.

60 SCORES

2 HOURS

A

section

B

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
1.		True.	1	5
2.		Ohm or $\Omega$	1	
3.		Magnetic dipole	1	
4.		c. Electromagnetic	1	
5.		a. Spherical	1	
6.		a. Roentgen	1	
7.		c. Isotopes.	1	
8.		Defenition OR $M = \frac{m}{V}$ OR. $M = \frac{P}{b \times t}$ $P =$ Pole strength $b =$ Breadth $t =$ thickness.  Dimension. / $L^{-1}A$ / $L^{-1}I$	1  1	2.
9.		Law (2 score) $\mathcal{E} = -\frac{d\phi}{dt}$ . (1 score)	2	2.
10.		$V = V_0 \sin \omega t$ $\frac{1}{2}$ $\frac{V_0}{R} = I_0$ $\frac{1}{2}$ $I = I_0 \sin \omega t$ 1 OR. figure only $\frac{1}{2}$ score.	$\frac{1}{2}$ $\frac{1}{2}$ 1	2
11.		$\oint \vec{B} \cdot d\vec{l} = \mu_0 \left[ i_c + \epsilon_0 \frac{d\phi_E}{dt} \right]$ / $\oint \vec{B} \cdot d\vec{l} = \mu_0 (i_c + i_d)$ OR Explanation - 2 score. OR Amperis circenital law / $I_d = \epsilon_0 \frac{d\phi_E}{dt}$ 1 score.	2	2

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
12		Defenition / conditions / correct figure	2	2
13		Defenition 2 score OR Equation only 1 score $\phi_0 = h\nu_0 / \phi_0 = h\nu / \lambda$	2	2
14		Defenition of both (1+1)  Example (1+1)	2	2
15		Any three properties (1+1+1) OR. $Q = I n e$ 1 score.	3	3
16	a.	$C = Q/V$ 1/2 $V = E \cdot d$ 1/2 $E = \frac{\sigma}{\epsilon_0}$ 1/2 $C = \frac{\epsilon_0 A}{d}$ 1/2  OR. final Eqn. only 1 score Correct figure 1 score.	2	3
	b.	increases. / $C = \frac{\epsilon_0 K A}{d}$ OR $\frac{\epsilon_0 \epsilon_r A}{d}$ OR $C = K \cdot C$	1	

Section  
C

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
17.	a.	Statement / $dB = \frac{\mu_0}{4\pi} \frac{I dl \sin \theta}{r^2}$	1	3
	b.	Correct derivation. 2 Score OR. Correct figure - 1 Score. Final equation 1 Score.	2	
18.		Any One Properties of each OR figure. 3 Score OR. Example. $\frac{1}{2}$ Score each.	3	3
19.	a.	Statement / Electromag: Induction	1	3
	b.	$E = \frac{d\phi}{dt}$ $\frac{1}{2}$ Score $\phi = NAB \cos \omega t$ $\frac{1}{2}$ Score $E = E_0 \sin \omega t$ . 1 Score. OR figure Only 1 Score.	2	
20		$A = \gamma_1 + \gamma_2$ 1 Score $d = l_1 + l_2 - A$ 1 Score $n = \frac{\sin(\frac{A+D}{2})}{\sin(A/2)}$ 1 Score. OR Snell's law - 1 Score figure only - 1 Score.	3	3
21.		Explanation -	3	3.

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
		<u>Section. D-</u>		
22.	a.	Definition OR figure 1 Score.	1	4
	b.	Equation of $E_{+q}$ 1 Score. Equation of $E_{-q}$ 1 Score. Final Equation 1 Score.	3	
		OR figure only 1 Score.		
23.	a.	Derivation. 2 Score. OR figure $\frac{1}{2}$ Score Final Equation $\frac{1}{2}$ Score.	2	4
	b.	$m = NIA$ . 1 Score $m = 100 \times 3.2 \times 3.14 \times (10 \times 10^{-2})^2$ 1 Score. $= 10 \text{ Am}^2 / 10.04 \text{ Am}^2 / 3.2 \pi \text{ Am}^2$	2	
		OR Final Answer only 1 Score.		
24	a.	Equation for 1 <sup>st</sup> Surface $\frac{1}{2}$ Score Equation for 2 <sup>nd</sup> Surface $\frac{1}{2}$ Score Final Equation 1 Score	2	4
		OR. figure $\frac{1}{2}$ Score Final Equation $\frac{1}{2}$ Score.		
	b.	$\frac{1}{f} = (n-1) \left[ \frac{1}{R_1} - \frac{1}{R_2} \right]$ 1 Score. $\frac{1}{12} = (n-1) \left[ \frac{1}{10} - \frac{-1}{15} \right]$ $\frac{1}{2}$ Score $n = 1.5$ $\frac{1}{2}$ Score	2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
25	a.	Explanation OR diagram (1+1)	3	4
	b.	Differentiation	1	
<u>Section - E</u>				
26	a.	$V = E \cdot dl / V = E \cdot d /$ $E = -\frac{dv}{dr}$	1	5
	b.	Derivation OR Correct figure Final Eqn only	2 2 score. $\frac{1}{2}$ score 1 score.	
	c.	Equation Substitution final Ans: $V = 4 \times 10^4 V$	2 1 score $\frac{1}{2}$ score $\frac{1}{2}$ score.	
27	a.	Statement of both / Equation.	2	
	b.	Diagram Derivation	3 1 score 2 score	
		OR $\frac{P}{Q} = \frac{R}{S}$ OR $\frac{R_1}{R_2} = \frac{R_3}{R_4}$ ( $\frac{1}{2}$ score.)		
28	a.	Mutual induction / El. mag. induction	1	5
	b.	Explanation.	2	
	c.	Difference / figure / Step up $N_s > N_p$ , $V_s > V_p$ , $I_s < I_p$ Step down: $V_s < V_p$ , $I_s > I_p$ , $N_s < N_p$ (1 score each)	2	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
29	a. Statement b. Correct derivation	OR. Correct figure $\frac{\sin i}{\sin r} = \frac{v_1}{v_2}$ OR $\frac{\sin i}{\sin r} = \frac{n_2}{n_1}$	2 3 1 Score. 1 Score.	5

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