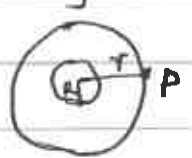
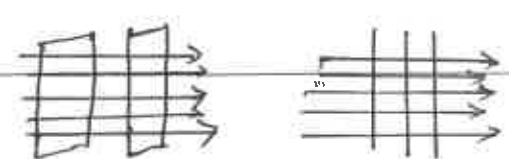


## SECOND YEAR HIGHER SECONDARY EXAMINATION MARCH 2019

SUBJECT: PHYSICS

CODE. NO: SY 24

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
1		Helical / Helix / figure	1	1
2		(iii) / NOR gate	1	1
3		$m^2 v^{-1} s^{-1}$ / $cm N^{-1} s^{-1}$ / $As^2 kg^{-1}$ / $cs kg^{-1}$	1	1
4		$10^{10} h$ / (iii)	1	1
5	a	$1:2$ / $1/2$ / $\frac{1}{4\pi\epsilon_0} \frac{P}{r^3}$	1	2
		(OR) Any one correct eqn $\frac{2P}{r^3}$ eqn $1/2$ score		
	b	Zero	1	
6	a	$Z = \sqrt{R^2 + (X_L - X_C)^2}$ / $Z = \sqrt{R^2 + (\omega L - \frac{1}{\omega C})^2}$	1	2
	b	$X_L = X_C$ / $\omega L = \frac{1}{\omega C}$ / Resonance / $Z = R$ / $f = \frac{1}{2\pi\sqrt{LC}}$ I or P is maximum	1	
7	i	X-rays	$1/2$	2
	ii	uv-rays	$1/2$	
	iii	Radio waves / microwaves	$1/2$	
	iv	IR rays	$1/2$	
		(OR) Any two correct answer give 2 score		
8		Resultant of $C_1$ & $C_2 = 300 \mu F$	$1/2$	2
		" of $C_3$ & $C_4 = 300 \mu F$	$1/2$	
		$\frac{1}{C} = \frac{1}{300} + \frac{1}{300}$	$1/2$	
		$C = 150 \mu F$	$1/2$	
		(OR) General equation for series & parallel final answer only give 2 score.		

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
9		To detect ice crystals in Saturn's rings In sunglasses, to produce 3D motion pictures, 3D camera, to view 3D motion pictures, wind screens in trains & aeroplanes, calculators Any two <u>OR</u> uses	1x2	2
10	(a)	Semi conductors / Name of any Semiconductors like Ge/Si etc	1	2
	(b)	$\rho = \frac{m}{ne^2L}$ / $\rho \propto \frac{1}{L}$	1	
11		Definition of half life period (OR) $T_{\frac{1}{2}} = 0.693 \cdot \frac{1}{\lambda} = \frac{\log 2}{\lambda}$	2	2
12	(a)	Gauss's Law Figure Derivation Final equation (OR) Gauss's Law / eqn Figure / Derivation / Final eqn Fig  $E = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2}$ OR $E = \frac{\sigma R^2}{\epsilon_0 r^2}$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3
	(b)	$E = 0$	1	
13	(a)	Definition	1	
	(b)	0	1	3
	c	Figure 	1	

(3)

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
14	(a)	declination	1	
	(b)	$\tan \theta = \frac{B_V}{B_H} = \sqrt{3}$	1/2	
		$\theta = 60^\circ$	1/2	3
		$B_H = B \cos \theta$	1/2	
		$B_H = 1.2 \times 10^{-4} \text{ T} \quad   \quad 1.2 \text{ G}$	1/2	
		Any equation <sup>(OR)</sup> like $B = \sqrt{B_H^2 + B_V^2}$ , $\tan \theta = \frac{B_V}{B_H}$ , $B_H = B \cos \theta$ give 1 score and substitution answer give 1 score. * Any alternate method give full score		
15	a.	Mutual induction / Electro magnetic induction / Induction	1	
				3
	b	$\frac{V_s}{V_p} = \frac{N_s}{N_p}$ $N_p = 400 \text{ turns / substitution}$	1	
			1	
16		Figure of experimental set up or figure to prove band width	1	
		Derivation (OR) Description only 1 score & $\beta = \frac{\gamma D}{d}$ only give 1 score	2	3
17	a.	Davisson and Germer expt	1	
		Verification / Explanation	2	

$$\lambda = \sqrt{\frac{150}{V}} \text{ \AA} \quad | \quad \lambda = \frac{12.3}{\sqrt{V}} \text{ \AA} \quad | \quad \lambda = 2d \sin \theta$$

give 1 score

(OR)

(4)

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
		Any one (OR) part (a) or (b) correct give 2 score		3
18	a	$BE = \Delta m \cdot c^2 / \Delta m \text{ in } u \times 931 \text{ MeV}$ $BE = (Z M_p + (A-Z) M_n - M) c^2$	1	
	b	Graph	1	3
	c	$\text{Fe}^{56} \quad   \quad \text{Fe}$	1	
		(OR) Any two correct answer give 3 score		
19		Statement of postulate $  L = \frac{nh}{2\pi}  $	1	
		$k = mvr = \frac{nh}{2\pi}$		
		Any correct derivation for eqn. of radius	1 1/2	4
		Any correct derivation for eqn. of energy	1 1/2	
		(OR) Postulate only give 2 score Equation of radius only 1 score <del>Equation of energy only 1 score</del>		
20	a	Definition or eqn. of mutual inductance	1	
	b	Derivation of $M = \frac{\mu_0 n_1 n_2 A l}{l}$	2	4
	c	$M L^2 T^{-2} A^{-2}$	1	
		(OR) Any two correct answer a/b/c give full score (4)		

(5)

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
21	a	$m = \frac{f_o}{f_c} = \frac{140}{5} = 28$	2	4
	b	$m = \frac{f_o}{f_c} (1 + \frac{f_c}{D}) = 28(1 + \frac{5}{25}) = 33.6$	2	
		If 'a' or 'b' correct give 4 score (or) any one eqn give 2 score		
22	a	Definition or equation or explanation of modulation index	1	
	b	$M = \frac{A_m}{A_c}$	1	4
		$M = \frac{10}{20} = 0.5$	1	
	c	X = Amplitude Modulator Y = Power amplifier	1/2 1/2	
23	a	Diagram working / Principle Derivation / eqn $f = \frac{qB}{2\pi m}$	1 1 1	5
	b	$B = \frac{2\pi m f}{q} = 0.66 T$	1+1	
		Eqn only 1 score, Substitution/Answer - 1		
24	a	Wheatstone's bridge principle		
		$\frac{P}{Q} = \frac{R}{S} \mid \frac{R_1}{R_2} = \frac{R_3}{R_4}$	1	
	b	$\frac{R}{S} = \frac{39.5}{60.5}$	1	
		$R = 8.2 \Omega$	1	5
		To minimise the resistance of connection	1	
	c	No current / No deflection	1	
		(or) Give 2 score for 'a' and 'b' each		



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3. Binu Baby.

4. V. J. Suresh

5. George. F

6. Jiji Thomas

7. HARIKRISHNAN. P

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9. Johnson Joseph

10. Benson Freeman

11. Faoussy - K. T. P

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12. SHANTY M. CIKOMAS

13. Hene Kumari. T

14. Sandhya Bhaskar

15. Chithraile

16. Bindu Issac

17. Maya. G

18. Premalatha. K.

19. Latha. P. C.

20. Anitha-P Antony

21. SHEEBA. K. S.

22. Remy Luke