

Second Year higher Secondary Examination March 2021

Scoring Indicators

Part III Physics

SY 224

Qn No	Scoring Indicators	Score	Total
1	Magnitude of charges or charges, Square (1/2+1/2)		1
2	(II) Gauss Law in magnetism		1
3	(II) ultraviolet rays		1
4	$\frac{1}{f} = (n - 1) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$		1
5	polarization		1
6	$\lambda = \frac{h}{p}$ or $\lambda = \frac{h}{mv}$		1
7	13.6eV		1
8	$4a_0$ OR $n^2 a_0$ OR four times		1
9	$V = \frac{1}{4\pi\epsilon_0} \times \frac{Q}{r}$	1	2
	$V = 4 \times 10^4$ V (unit not necessary) or correct substitution	1	
10	Statement or $dB \propto \frac{I \sin \theta}{r^2}$	1	2
	$dB = \frac{\mu_0 I \sin \theta}{4\pi r^2}$ OR any correct form of equation OR equation only give two	1	
11	Figure	1	2
	Wheatstone's bridge Balancing condition ($I_g = 0$) Or Wheatstone's equation	1	
12	$\frac{R}{3} = \frac{40}{60}$ $R = 2 \Omega$ $1 + 1 = 2$ OR Equation or substitution only 1 mark Direct answer without substitution or equation then also give 2 mark		2
13	Any two properties	2	2
14	Definition of half life	1	2
	$T_{1/2} = \frac{0.693}{\lambda}$	1	
15	$H = nI$	1	2
	2000A/m OR Direct answer without substitution or equation then also give 2 mark	1	
16	(a) Substance Q	1	2
	(b) negative	1	
17	$E = L \frac{di}{dt}$	1	2
	$L = 4H$ OR Equation +Substitution (with out answer)give 2 mark. Direct answer without substitution or equation then also give 2 mark	1	
18	Ray diagram	1	2
	Proof	1	

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19		$I_m = \frac{V_m}{R}$	1	2
		$I_0 = 0.64A$	1	
		OR Equation for $I_{rms} = \frac{I_0}{\sqrt{2}}$ $I_m = \frac{V_m}{R}$ give 1 mark each Direct answer without substitution or equation then also give 2 mark		
20		Any two postulate or equation	2	2
21		OR gate	1	2
		Correct truth table	1	
22		Eddy current	1	2
		Any two applications	1	
23		Definition of electric dipole moment or equation	1	3
		$P=2aq$ ----- 1	2	
		$7.5 \times 10^{-8} \text{Cm}$ – ve Z direction ----- 1		
		(answer without direction also give 1 mark)		
24		Any two properties of electric field lines	2	3
		q_1 positive q_2 negative	1	
25		Correct derivation of energy stored either mathematically or graphically OR If any correct equation of energy give 1 mark	3	3
26		Any one difference between polar and non polar molecule	1	3
		One example each	2	
27	A	Definition of dip or correct figure showing dip	$1\frac{1}{2}$	3
		$\tan \theta = 1$ OR $\theta = 45^\circ$	$1\frac{1}{2}$	
28		6Ω and 3Ω	1	3
		$R = 10 \Omega$ $I = 2.4 \text{ A}$ OR Equation of series or parallel combination give 1 mark ($1/2 + 1/2 = 1$)	1 1	
29				3
		Correct Derivation $B = \mu_0 n I$ give 3 score OR Figure 1 Amperes circuital law 1 Derivation 1		

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30		Circuit Diagram showing conversion	1	3
		Explanation OR Equation	2	
31		Derivation of value of instantaneous current give 3 score OR Circuit diagram or phasor 1 Derivation 1 Final answer 1		3
32	a	Displacement current	1	3
	b	$C = \frac{E}{B}$ OR $C = \frac{E_0}{B_0}$	1	
		$B = 2.1 \times 10^{-8} T$	1	
33		Explanation with correct figure {Figure - 2 Equation - 1}	3	3
34	a	$KE_{max} = h(\nu - \nu_0)$ any other form of equation	2	3
	b	Explanation of "Negative kinetic energy"	1	
35	a	Figure of parallel combination	1	4
	b	Correct derivation of equivalent capacitance OR Equation only give 1 score	3	
36		Correct derivation of equation of $B = \frac{\mu_0 N I R^2}{2(R^2 + X^2)^{\frac{3}{2}}}$ with figure give 4 score OR Figure 1 Biot -Savart Law 1 Derivation 2		4
37	a	Energy	1	4
	b	$E = Blv$	1	
		$E = 3.625 V$ OR Unit not necessary Ans only or substitution only give 2 score	2	
38		Correct derivation of $\frac{n_2}{v} - \frac{n_1}{u} = \frac{n_2 - n_1}{R}$ with figure Figure 1 Derivation 3	4	4
39		Ray diagram	2	4
		$L = f_0 + f_e$	2	
40		Derivation of Snell's law Figure 2 Derivation 2 (Equation or statement of Snell's law give 1 score)		4
41	a	Figure (i)	1	4
	b	Correct diagram 2 Explanation 1 OR If explanation only is correct give 2 score OR correct waveform give 1 score	3	

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42	a	True	1	5
	b	Statement of Gauss Law OR equation	2	
	c	Correct derivation with figure(answer only give 1 score .figure only give 1 score)	2	
43	a	$E \propto l$	2	5
	b	Explain with correct circuit diagram ----- 1 $\frac{E_1}{E_2} = \frac{l_1}{l_2}$ ----- 2 OR If diagram only give 2 score	3	
44	a	(i) mutual induction	1	5
	b	(ii) Any one difference OR Figure of step-up ,step-down	1	
	c	$\frac{V_P}{V_S} = \frac{N_P}{N_S}$	2	
		$N_S = 400$	1	
45		Correct ray diagram	2	5
		Correct derivation $r_1 + r_2 = A$ -----1 $d = i_1 + i_2 - A$ -----1 Answer (snells law) -----1 OR $\left(\text{At minimum deviation } i = \frac{A+D}{2} \text{ or } i - d \text{ curve OR } r = \frac{A}{2} \text{ etc give 1 score} \right)$	3	

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11038	233485	ABDUL GAFOOR CP	7356415499	
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04039	156992	PRAMOD KUMAR G		
05057	209899	JAYASREE G		
06018	194698	SEBASTIAN MATHEW		
07051	196585	JOHNSON JOSEPH		
08055	411081	K SENSON VARGHESE		
09155	450961	SUBAS A JOSE		
10018	765949	DAYANA KURIAKOSE		
12018	232152	BENNY FREEMAN		
13020	481646	HARIKRISHNAN P R		
31059		NARAYANAN NAMPOOTHRI P P		
		SHEEBA KS		
		SREEDEVI R		
		LATHA P C		
		FOUSSY K T P		
		BIJESH T P		
		SMITHA D		