ANSWER KEY

SECOND YEAR HIGHER SECONDARY EXAMINATION ~~MARCH~~ SAY 2022

PART-I/II/III

SUBJECT: PHYSICS.

CODE NO: ~~SK 524~~ SAY 724 VERSION: P

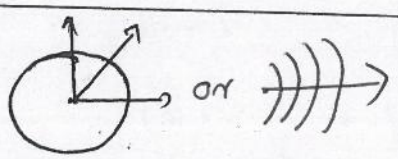
60 SCORES 2 HOURS

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
A		PART · I		
1		0 , Zero ·		1
2.		(b) or 90^0		1
3		(c) or increases 4 times		1
4.		0 , Zero		1
5		2 : 3		1
6		0, Zero		1
7.		(d) or $\frac{hr}{c}$		1
8.		$0.6 \times 10^{-11} m$		1
9.		(b) or $\frac{\pi}{2}$		1
B 10		0 , Zero		1
11		$V_d = +\frac{eE}{m}\tau$ or $V_d = \frac{eV}{md}\tau$ or $i = neAV_d$ or any correct equation		1
12		50 Hz		1
13		1.33 $\left\{ n = \frac{c}{v} = \frac{3\times10^8}{2.25\times10^8} \right\}$		1

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
A		PART II		
14	(a)	correct statement or $q = \pm ne$	1	2
	b	$K = \frac{F_{vacuum}}{F_{medium}} = \frac{10N}{5N} = 2$, $F = \frac{1}{4\pi\varepsilon_0}\frac{q_1 q_2}{r^2}$ (½)	1	
15	(a)	$F = 0$ { $F = qvB\sin\theta$, $\sin\theta = 0$	1	2
	(b)	$B = \frac{\mu_0 nI}{2a}$ or $\frac{\mu_0 I}{2a}$	1	
16	(a)	(c) or Resistive	1	2
	b	$X_L = X_C$ or $L\omega = \frac{1}{C\omega}$ or Inductive reactance = capacitive reactance or $Z = R$	1	
17		NAND GATE	1	2
			1	
B 18		(a) Diamagnetive (b) Paramagnetive / Ferro magnetic		2
19		Resolving power increases	1	2
		For microscope, $R.P = \frac{1}{d} = \frac{2n\sin\beta}{\lambda}$		
		For telescope $R.P = \frac{1}{d\theta} = \frac{D}{1.22\lambda}$ or Resolving power $\propto \frac{1}{\lambda}$ or Resolving power increases – Give 2 Score	1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
20		Radiowaves → microwaves → visible light → X-rays.		2
A		PART III		
21	1a)	$e_1 = \frac{e}{3}$, $e_2 = 3e$ ① + ① or $\frac{e_1}{e_2} = \frac{1}{9}$ or 1:9.	2	3
	b)	Correct equation give full credit. or any one correct eqn	1	
22	a)	Correct statement	2	3
	b)	Neat diagram of wheatstone bridge	1	
23		Name and Definition of magnetic element. or Declination dip/inclination Horizontal intensity		3.
24	a)	Work function or Threshold energy or $\phi_0 = h\nu_0$	1	3
	b)	$h\nu$ = Work function + K.E max	1	
		$\frac{1}{2} m v_{max}^2 = (h\nu - \phi_0)$	1	
B				
25	a)	Write two conditions	2	3
	b)	$n = \frac{1}{\sin c}$ or $\sin c = \frac{1}{n}$	1	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
26	a)	Lyman, Balmer, Pasehen, Brackett, pfund ½ score for each	2	3
	b)	Balmer series	1	
27	a)	$E = mc^2$	1	3
		$E = 10^{-3} \times (3\times10^8)^2$ J		
		$= 9 \times 10^{13}$ J	1	
	b	$E_b = \Delta mc^2$	1	
A		PART IV		
28	a)	farad or F	1	4.
	b)	ii) or decreased	1	
	c	$W = \int_0^q \frac{q}{C} dq$ - ½		
		$W = \left[\frac{q^2}{2C}\right]_0^q$ - ½		
		$W = \frac{Q^2}{2C}$ — 1	2	
		Energy, $U = \frac{Q^2}{2C}$ or $\frac{1}{2}CV^2$ or $\frac{1}{2}QV$ — 1		
		Or any correct derivation.		
29	a.	0, Zero	1.	4.
	b.	Give full credit to correct derivation. Final equation – 1 score Figure – 1 Score	3.	

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
30	a)	Energy	1	
	b	Correct Statement	2	4.
	c)	(ii) or resistance of the coil.	1	
31.	a.	Correct diagram give full credit	1	
	b.	Correct derivation give full credit	2.	4
	c.	(ii) decreases. vector diagram or / phasor diagram – 1	1	
32	a.	Spherical. or  or	1	
	b.	Correct explanation with figure give full credit. $i = r$ – 1 score	3	4.
33	a)	p-n junction diode or junction diode or diode	1	
	b)	Correct explanation give full credit	2	4
	c)	correct diagram	1	
A		PART V		
34.	a)	$\Phi = \frac{q}{\varepsilon_0}$ or $\phi = \int E \cdot dS = q/\varepsilon_0$	1	
	b)	Gauss theorem	1	
		statement or equation	1	6
	c)	diagram	1	
		derivation	2	
		final equation – 1 score		

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_____YEAR HIGHER SECONDARY EXAMINATION _____20

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_____ SCORES _____ HOURS

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35	a)	Ohm or Ω	1	
	b)	Correct derivation give full credit Figure – 1 score Final equation – 1 score	3.	
	c)	(i) R (ii) or (ii) For a single loop equivalent resistance = $\frac{4}{3}\Omega$. ∴ For three loop net resistance $= \frac{4}{3} \times 3 = 4\Omega$	2	6
36	a)	diopter or m^{-1} or D	1	
	b)	Ray diagram derivation Final equation – 1 score	1 2	
	c)	$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2}$ (Substitution) $f = 6.67$ cm Power $P = \frac{10^{+2}}{6.67} = 14.9$ diopter or 15 diopter	1 1	6

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