

SECOND YEAR HIGHER SECONDARY EXAMINATION, JUNE 2017

PHYSICS

Qn. No	Sub Qns	Answer Key / Value points	Score	Total
1		Zinc	1	1
2		(iii) electron volt	1	1
3		(iv) $I_E = I_B + I_C$	1	1
4	(a) b)	electron $P = \frac{h\nu}{\lambda}$ $P_e = P_p$ $E_e = \frac{P_e^2}{2m_e}$ $E_p = \frac{P_p^2}{2m_p}$ $\frac{E_e}{E_p} = \sqrt{\frac{m_p}{m_e}} = 1$ $= \frac{\sqrt{1840}}{1}$ OR $\lambda = \frac{h}{P}$ OR $\frac{h}{\sqrt{2mE}}$ OR $\frac{h}{\sqrt{2 \text{ meV}}}$ (2)	1 1 1	3
5		Any option	1	1
6		$X_L = L\omega$ OR $X_L = 0$	1	1
7	(a) b)	$\sin C = \frac{n_2}{n_1} = \frac{C_2}{C_1}$ $\frac{C_2}{C_1} = \frac{8}{9}$ $C_2 = \frac{9}{8} \times 2 \times 10^8 = 2.25 \times 10^8$ m/s OR $n = \frac{1}{\sin C}$ — (2) No. OR speed of light depends on the colour or frequency or wavelength OR apparent depth depends on speed of light or refractive index	1 1 1	

SECOND YEAR HIGHER SECONDARY EXAMINATION, JUNE 2017

Qn. No	Sub Qns	Answer Key / Value points	Score	Total
	c)	Figure Derivation	1 1	6
8.	a)	$\frac{\lambda D}{1 \times 10^{-3}} = .6 \times 10^{-3}$ $\frac{\lambda (D + .25)}{1 \times 10^{-3}} = .75 \times 10^{-3}$ $\frac{D + .25}{D} = \frac{5}{4} \quad D = 1 \text{ m.}$ <p>OR</p> $\beta = \frac{\lambda D}{d} \quad \text{only give (2)}$	1 1	3
	b)	(iv) Diffraction	1	
9.	a)	ii) Current	1	
	b)	Visible region	1	
	c)	$\frac{1}{\lambda_1} = \frac{5}{36} R_H \quad \frac{1}{\lambda_2} = \frac{1}{4} R_H$ $\frac{\lambda_2}{\lambda_1} = \frac{5}{9} \quad \lambda_2 = \frac{5}{9} \times 656.4 = 364.67 \text{ nm}$ <p>OR</p> $\Delta = \frac{1}{\lambda} = R_H \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right) \quad \text{only give score (2)}$	1	4
10.	A	Figure Derivation OR	2 } 2 }	4
		Figure Derivation Final equation	1 } 2 } 1 }	

SECOND YEAR HIGHER SECONDARY EXAMINATION, JUNE 2017



Qn. No	Sub Qns	Answer Key / Value points	Score	Total
11	(a)	9	1	3
	(b)	$N = N_0 e^{-\lambda t}$ OR $\frac{N}{N_0} = \left(\frac{1}{2}\right)^{\frac{t}{T_{1/2}}}$	1	
		$\frac{1}{2} = e^{-5\lambda}$ OR $\frac{1}{16} = e^{-\lambda t}$ $t = 20 \text{ hrs}$ (only give 2)	1	
12	a) ii) 90°		1	3
	b)	$T = 2\pi \sqrt{\frac{l}{g \cos B}}$ OR $T \propto \frac{1}{\sqrt{\cos B}}$ OR $B \propto \frac{1}{T^2}$ OR B_1 is higher	2	
13	a)	statement or equation	2	6
	b)	Figure Derivation Final equation OR.	1 2 1	
(b)	Figure Derivation and working	1	3	
		3		
14	a)	$I = \frac{E}{R+r}$	1	
		$V = IR$ OR $E - IR$ OR $\frac{ER}{R+r}$	1	

Q. No	Sub Q. no	Answer key / Value Points	score	Total
	(b)	Any related attempt	2	5
	(c)	Internal resistance OR Resistance	1	
15	a)	Definition Application (any one)	1 1	4
	(b)	Bulb becomes less bright OR Inductive reactance increases OR $X_L = L\omega$ (give 1 score)	2	
16	(a)	Any related attempt	1	5
	(b)	Any related attempt	2	
	(c)	$\frac{V_m}{V_c} = m$	1	
		$\frac{V_m}{12} = 0.75$ $V_m = 12 \times 0.75 = 9V$	1	
17	a)	Energy = $\frac{Q^2}{2C}$ OR $\frac{1}{2} CV^2$ OR $\frac{1}{2} QV$	1	7
	b)	Explanation	2	
	c)	Series OR parallel. Figure Derivation Final equation OR	1 2 1	

Qn No:	Sub Quest.	Answer key/value points	Score	Total
	c)	<p style="text-align: center;">OR.</p> <p>Figure Derivation Final equation</p>	<p style="text-align: center;">1 2 1</p>	
18.		<p>No</p> $E_g = h\nu = \frac{hc}{\lambda} \quad \text{OR} \quad \frac{hc}{\lambda} < E_g$ <p style="text-align: center;">OR</p> $\lambda = \frac{6.62 \times 10^{-34} \times 3 \times 10^8}{2.8 \times 1.6 \times 10^{-19}} = 443.3 \text{ nm}$ <p>5000 nm is higher 443.3 nm.</p> <p>It can't detect</p>	<p style="text-align: center;">1 1</p>	<p style="text-align: center;">2</p>