12th Standard Physics

Marking scheme

1	Pole strength of a magnetic dipole	1
2	Microwaves	1
	OR	
	Equal to 1	1
3	Straight line path	1
4	No	1
5	3.65×10^{-7} m	1
	OR	
	1.23×10^{-7} m	1
6	Ultra-violet rays	1
7	X – positron or $(_{+1}^{0}e)$	1
	OR	
	1amu is equivalent to 931 MeV	1
8	Zero	1
	OR	
	p-type semiconductor	1
9	Decreases	1
10	1:1	1
11	(a)	1
12	(c)	1
13	(a)	1
14	(d)	1
15	(i) (a)	1
	(ii) (c)	1
	(iii) (c)	1
	(iv) (b)	1
	(v) (a)	1
16	(i) (a)	1

(ii) (d) 1

(iii) (d) 1

(iv) (c) 1

(v) (a) 1

17 $I = e/T = e\,\omega/2\pi$ 1

$B = \mu_o I/2r = \mu_o e\omega/4\pi r$ 1

18 $\frac{1}{f} = (n-1)\left[\frac{1}{R} - \frac{1}{-R}\right] = (n-1)[\frac{2}{R}]$ 1

$\frac{1}{f'} = (n-1)\left[\frac{1}{R} - \frac{1}{\infty}\right] = (n-1)[\frac{1}{R}]$ f' = 2f 1

OR

$\frac{1}{f} = (n-1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$ ½

$\frac{1}{12} = (n-1)\left[\frac{1}{10} + \frac{1}{15}\right]$ 1

n=3/2 ½

19 $\phi = E1.A \cos 180^0 + E2\ A \cos 0^0$ 1/2

$= 10x\ 0.01x(-1) + 15x0.01x1$ 1

$= 0.05\ Nm^2C^{-1}$ ½

OR

$0 = k(-q)(+Q)/r + k(+Q)(-q)/r + k(-q)(-q)/2r$ 1

$0 = -2kqQ/r + kq^2/2r$ ½

$Q/q = ¼$ ½

20 circuit diagram 1

Wave forms 1

21 $E_o = NBA\omega = 20 \times 3x10^{-2}x(22/7)x(0.07)^2x50$ 1

$=0.46$ V ½

$I_o = 0.46/10 = 0.046$ A ½

22 $x=n_1\beta_1 = n_2\beta_2$

$n\ 650=(n+1)x520$ ½

n=4 ½

$x=4x1.2x650x10^{-9}/(2x10^{-3}) = 1.56$mm 1

23	circuit diagram	1
	Characteristics	1
24	$\frac{1}{f} = (n-1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$	
	$\frac{1}{20} = (1.5-1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$	1/2
	$\frac{1}{f} = \left(\frac{1.5}{1.65} - 1\right)\left[\frac{1}{10}\right]$	
	F= -110 cm	1
	n=1.5	½
25	$N_1 \times 2\pi R = N_2 \times 2\pi R/2$	½
	$N_2 = 2N_1$	1/2
	$M2/M1 = 2N.\pi(R/2)^2/N.\pi R^2$ = ½	1
	OR	
	I = q/t = e/(2πr/v)	1
	ev/2πr	1
26	$H = B_E \cos 60^0 = 0.4\times10^{-4} \times$ ½	
	$V = B_E \sin 60^0 = 0.4\times10^{-4} \times \sqrt{3}/2$	1
	(i)e = Vlv =1.75 mV	1
	(ii)e = Hlv = 1 mV	1
27	(i)A	1
	(ii)B	1
	(iii) slope = $v_d/V = e\tau/ml$	1
	OR	
	(i)E is halved and R is same	1
	(ii)E is doubled and R is halved	1
	(iii)E remains same and R becomes one-fourth	1
28	$K = hc(1/\lambda_1 - 1/\lambda_o)$	1
	$2k = hc(1/\lambda_2 - 1/\lambda_o)$	1
	$\lambda_o = \lambda_1 . \Lambda 2/2\ \lambda_2 - \lambda_1$	1
29	$hc/\lambda = 0 - E_1 = 13.6 \times 1.6\times10^{-19}$	1

	λ = 91 nm	1
	it will ionose the atom and impart kinetic energy to emitted electron	1
30	(a) 6 fm	1
	(b) $2K = ke^2/2r$	1
	K = 360 keV	1
31	Statement	1
	Derivation	3
	Graph	1
	OR	
	Definition and SI unit	2
	Diagram and expressions	3
32	X resistor, Y – inductor and Z – capacitor1	3
	Z = R	1
	Graph	1
	OR	
	X is capacitor and $Xc = 1/\omega C$	2
	Xc varies inversely to frequency and graph	1
	Graphs	1
	Phasor diagram	1
33	Diagram and formula	3
	Diagram and advantages	2
	OR	
	(a) Intensity pattern	1
	Central maxima = $2D\lambda/a$ and first secondary maxima = $D\lambda/a$	
	So width of central maxima = 2 width of first secondary maxima	2
	Two characteristics features	2