

Kendriya Vidyalaya Sangathan, Lucknow Region
Session-2022-23
Second Pre-Board Examination
Class-12th
Subject-Physics (Theory)
Marking Scheme

S.No.	Marking Scheme	Marks
1	(i) increases	1
2	(ii) $2pE$	1
3	(i) while charging	1
4	(iv) internal resistance of combination of cells is = external resistance	1
5	(ii) 100 %	1
6	(i) rotation of atomic magnetic dipole	1
7	(iv) increases and then decreases with time	1
8	(ii) less than acceleration due to gravity	1
9	(iv) microwaves	1
10	(i) appears as a concave lens but behaves as a diverging lens	1
11	(iii) Prism gets disappeared when dipped in a liquid of refractive index same as than that of lens material.	1
12	(iii) $n^2 r_0$	1
13	(iv) $E_0/9$	1
14	(i) $n_r=5,6,7$ to $n_r=4$	1
15	(iv) zero	1
16	c) A is true but R is false	1
17	d) A is false and R is also false	1
18	c) A is true but R is false	1
19	100 % Correct answer Solution	$\frac{1}{2}$ 1 $\frac{1}{2}$
20	5 A Correct answer Solution OR R/n^2 Correct answer Solution	$\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$
21	$R_p/R_a = 1:1$ Correct answer Solution OR $B = \mu_0 i/2r(1 + \pi)$ Correct answer Solution	$\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$
22	Ba^2/t Correct answer Solution	$\frac{1}{2}$ 1 $\frac{1}{2}$
23	Construction Working Wave form	$\frac{1}{2}$ 1 $\frac{1}{2}$
24	Curve Showing correct regions	1 1
25	(i) Correct graph	1

	(ii) Correct graph	1
26	$\text{Kinetic Energy, } K = \frac{1}{2}mv^2 = \frac{1}{2}m\frac{p^2}{m^2} = \frac{p^2}{2m}$ $p = \sqrt{2mk}$ $\lambda = \frac{h}{p} = \frac{h}{\sqrt{2mK}}$ Since, $\lambda_e = \lambda_\alpha$ $\text{Hence, } \frac{K_e}{K_\alpha} = \frac{m_\alpha}{m_e}$ OR De Broglie wavelength $\lambda = h/\sqrt{(2mqV)}$, Therefore $\lambda/(1/\sqrt{V}) = 1/(\sqrt{2mq}) = \text{slope of the graph}$ Therefore Slope $\propto 1/(\sqrt{m})$ as slope is greater for B it has smaller mass.	1 1 1 1 1 1 1
27	(a) Wavelength of electromagnetic wave $\lambda = c/v = 3 \times 10^8 / 2 \times 10^{10} = 0.015\text{m}$ (b) Amplitude $B_0 = E_0/c = 48/3 \times 10^8 = 1.6 \times 10^{-7}\text{T}$ (c) Average energy density $u = \frac{1}{2} \epsilon_0 E^2 = 5.09 \times 10^{-9} \text{J/m}^3$. OR Wavelength of electromagnetic wave $\lambda = c/v = 3 \times 10^8 / 5 \times 10^{19} = 6 \times 10^{-12}\text{m}$. It is gamma ray 2 Uses of gamma ray X-ray 1 Use of X-ray	1 1 1 1 1 1/2 1/2
28	Figure Proof of both the laws Correct source	1/2 2 1/2
29	Statement Derivation	1 2
30	Any two processes Diagram Explanation	1 1/2 1 1/2
31	(i)Correct derivation (ii)Correct derivation OR (i)Correct derivation (ii)Correct diagram Three reasons	2 1/2 2 1/2 2 1/2 1 1 1/2
32	(i) $R = 20\Omega$ $X_L = 2\pi fL$ Therefore $L = X_L / 2\pi f = .03 \text{ H}$ Phase difference = 0 (ii) Correct graph for (a) Correct graph for (b) OR (i)Diagram Construction Working (ii)Connecting a resistance of value $.01\Omega$ in parallel with galvanometer Calculation	1 1/2 1 1/2 1 1 1 1 1 1
33	(i) Derivation Condition for stable equilibrium Condition for unstable equilibrium (ii) Derivation for electric field at axial point	2 1/2 1/2 1

	Derivation for electric field at axial point OR (i) $\phi = 0$ No change in flux. (ii) Derivation of electric field for (a) Derivation of electric field for (b) Derivation of electric field for (c)	1 1 1 1 1 1
34	(i) 20 cm. (ii) No change in power. Will remain the same. No change OR When the object is kept between optical centre and focus of a bi-convex lens, the image is formed on the same side, behind the object. The image thus formed is virtual, enlarged and erect. Ray Diagram (iii) It will start behaving as a diverging lens	1 1+1 1+1 1
35	(i) $V_0 220 \times \sqrt{2} = 311$ Volt 220 V A.C. is more fatal as its peak value is 311 V. OR The hot wire instrument is based on the principle of heating effect of current. As temperature increases, resistance of a resistor will also increase. $H = I_{\text{rms}}^2 R t$ Hence it can measure both ac and dc current as both produce heat when passed through a conductor. (ii) Heating effect is independent of direction of current. (iii) RMS Value of alternating current	1+1 1+1 1 1