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	$(iv) E_o/9$	1
14	(i) n _i =5,6,7 to n _f =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	1/2
	Solution	1 ½
20	5 A	
	Correct answer	1/2
	Solution	1 ½
	OR	
	R/n ²	1/
	Correct answer Solution	1 ½
21		1 /2
	$R_p/R_\alpha = 1:1$ Correct answer	1/2
	Solution	1 1/2
	OR	1 /2
	$B = \mu_0 i/2r(1 + \pi)$	
	Correct answer	1/2
	Solution	1 ½
22	Ba ² /t	
	Correct answer	1/2
	Solution	1 ½
23	Construction	1/2
	Working	1
	Wave form	1/2
24	Curve	1
	Showing correct regions	1
25	(i) Correct graph	1

	(ii) Correct graph	1
26	Kinetic Energy, $K = \frac{1}{2}mv^2 = \frac{1}{2}m\frac{p^2}{m^2} = \frac{p^2}{2m}$	1
	μ	
	$p = \sqrt{2mk}$	1 1
	$\lambda = \frac{h}{p} = \frac{h}{\sqrt{2mK}}$	'
	Since, $\lambda e = \lambda_{\alpha}$	
	Hence, $\frac{K_e}{K_\alpha} = \frac{m_\alpha}{m_e}$	
	Hence, $\frac{\sigma}{K_{\alpha}} = \frac{\pi}{m_{e}}$	1
	OR	
	De Broglie wavelength $\lambda = h/\sqrt{(2mqV)}$,	1
	Therefore $\lambda/(1/\sqrt{V}) = 1/(\sqrt{2mq}) = \text{slope of the graph}$	1 1
	Therefore Slope $\propto 1/(\sqrt{m})$ as slope is greater for B it has smaller mass.	
27	(a) Wavelength of electromagnetic wave $\lambda = c/v = 3x10^8/2x10^{10} = 0.015m$	1
	(b) Amplitude $B_0 = E_0/c = 48/3x10^8 = 1.6x10^{-7}T$	1
	(c) Average energy density $u=\frac{1}{2} \in E^2 = 5.09 \times 10^{-9} \text{ J/m}^3$.	1
	OR	
	Wavelength of electromagnetic wave $\lambda = c/v = 3x10^8/5x10^{19} = 6x10^{-12}$ m. It is	'
	gamma ray 2 Uses of gamma ray	1 1
	X-ray	1/2
	1 Use of X-ray	1/2
28	Figure	1/2
	Proof of both the laws	2
29	Correct source Statement	1/2
29	Derivation	2
30	Any two processes	1
	Diagram	1/2
	Explanation	1½
31	(i)Correct derivation	2½
	(ii)Correct derivation OR	2½
	(i)Correct derivation	2½
	(ii)Correct diagram	1
	Three reasons	1½
32	(i)R=20Ω	1
	$X_L=2\pi fL$	1/2
	Therefore L= $X_L/2\pi f$.03 H	1 1/2
	Phase difference = 0 (ii) Correct graph for (a)	1
	Correct graph for (b)	1 1
	OR	
	(i)Diagram	1 1
	Construction	1 1
	Working (ii) Connecting a registering of value, 010 in parallel with galvanemeter	
	(ii)Connecting a resistance of value .01 Ω in parallel with galvanometer Calculation	1 1
33	(i) Derivation	2
	Condition for stable equilibrium	1/2
	Condition for unstable equilibrium	1/2
	(ii) Derivation for electric field at axial point	1

		. 1
	Derivation for electric field at axial point	1
	OR	
	(i) $\varnothing = 0$	1
	No change in flux.	1
	(ii) Derivation of electric field for (a)	1
	Derivation of electric field for (b)	1
	Derivation of electric field for (c)	1
34	(i) 20 cm.	1
	(ii) No change in power. Will remain the same. No change	1+1
	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	1+1
	formed is virtual, enlarged and erect.	
	Ray Diagram	
	(iii) It will start behaving as a diverging lens	
	() it i'm clair benaring as a arrenging ione	1
35	$(i)V_0220 \times \sqrt{2} = 311 \text{ Volt}$	1+1
	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	1+1
	temperature increases, resistance of a resistor will also increases. H= $I^2_{rms Rt}$	
	Hence it can measure both ac and dc current as both produce heat when	
	·	
	passed through a conductor.	
	(ii) Heating offect is independent of direction of current	1
	(ii) Heating effect is independent of direction of current.	1
	(iii) RMS Value of alternating current	1