

**DIRECTORATE OF GOVERNMENT EXAMINATIONS ,CHENNAI -6
HIGHER SECONDARY SECOND YEAR EXAMINATION - AUGUST 2021**

PHYSICS KEY ANSWER (NEW SYLLABUS)

NOTE

1. Answer written in Blue or Black ink only to be evaluated
2. Choose the most suitable answer in Part A from given alternatives and write the option code and corresponding answer
3. For answers in Part-II, Part-III & part-IV reasoning, explanation, narration, description and listing of points students may write in their own words but without changing the
4. In numerical problems, If formula is not written. marks should be given for the remaining correct steps
5. In graphical representation physical variable for X-axis and Y-axis should be marked

TOTAL MARKS -70

PART- I			15X1=15
Answer all the Questions			
TYPE A			
1	A) UNIFORMLY CHARGED INFINITE PLANE		1
2	A) PARROT FISH		1
3	B) 2A		1
4	A) LONGITUDINAL		1
5	A) 4.8		1
6	C) Nm^2C^{-1}		1
7	A) $Q/\sqrt{2}$		1
8	A) 0.833		1
9	C) VOLTAGE REGULATOR		1
10	D) V_a/V_w		1
11	D) 25 cm		1
12	D) 0.5Ω		1
13	A) $\sqrt{\frac{2q^3 B^2 V}{m}}$		1
14	B) 2D		1
15	A) THERMIONIC		1
TYPE B			
PART A			15X1=15
1	A) $Q/\sqrt{2}$		1
2	B) 2D		1
3	A) UNIFORMLY CHARGED INFINITE PLANE		1
4	A) 0.833		1
5	D) 0.5Ω		1
6	A) 4.8		

7	D) V_a/V_w	1
8	C) Nm^2C^{-1}	1
9	D) 25 cm	1
10	A) PARROT FISH	1
11	A) THERMIONIC	1
12	C) VOLTAGE REGULATOR	1
13	A) LONGITUDINAL	1
14	A) $\sqrt{\frac{2q^3 B^2 V}{m}}$	1
15	B) 2A	1

PART - II

6X2=12

ANSWER ANY SIX QUESTIONS

Q.NO 24 IS COMPULSORY

16	ANY TWO WAYS	2X1=2	2
17	FORMULA ($n=\tan \phi$)	1/2	2
	SUBSTITUTION	1	
	ANSWER (56.3°)	1/2	
18	CORRECT DEFINITION		2
19	CORRECT DEFINITION		2
20	CORRECT DEFINITION		2
21	CORRECT LAW (or) If only equation is written 1 mark		2
22	FOR PROPER EXPLANATION		2
23	ANY TWO USES OF IR RAYS	2X1=2	2
24	FORMULA $V_{max} = E_{max} R$	1	2
	SUBSTITUTION	1/2	
	ANSWER (1.6 million volt) (or) any equivalent value	1/2	

PART -III

6X3=18

ANSWER ANY SIX QUESTIONS

Q.NO 33 IS COMPULSORY

25	KIRCHOFF'S CURRENT LAW	11/2	3
	KIRCHOFF'S VOLTAGE LAW	11/2	
26	CRITICAL ANGLE CORRECT DEFINITION	11/2	3
	TOTAL INTERNAL REFLECTION CORRECT DEFINITION	11/2	
27	ANY THREE CHARACTERISTICS	3X1=3	3
28	UP TO $dW = V dQ$	1	3
	UPTO $w = \int_0^Q \frac{Q}{C} dQ = \frac{Q^2}{2C}$	1	
	up to $U_E = \frac{Q^2}{2C} = \frac{1}{2} CV^2$	1	
29	THREE DIFFERENCES	3X1=3	3
30	FORMULA $F = k \frac{q_{m_A} q_{m_B}}{r^2}$	1	3
	SUBSTITUTION	1	
	ANSWER (30 N/T)	1	

31	CIRCUIT DIAGRAM	2	3
	INPUT & OUTPUT WAVE FORMS	1	
32	MENTION THREE ENERGY LOSSES	3X1=3	3
33	CALCULATION FOR α, β AND γ DECAY	2	3
	FINAL ATOMIC NO:Z= 91 MASS NO : A=227	1	
PART - IV		5X5=25	
ANSWER ALL THE QUESTIONS		5X5=25	
34 a	DIAGRAM	1/2	5
	EXPLANATION	1/2	
	$d\vec{B} = \frac{\mu_0}{4\pi} \frac{Idl \sin \theta}{r^2} \hat{n}$	1/2	
	UP TO $= \frac{\mu_0}{4\pi} \frac{Id\phi}{r} \hat{n}$	1	
	UP TO $d\vec{B} = \frac{\mu_0 I}{4\pi a} \cos \phi d\phi \hat{n}$	1	
	UP TO $\vec{B} = \frac{\mu_0 I}{4\pi a} (\sin \phi_1 + \sin \phi_2) \hat{n}$	1	
	UP TO $\vec{B} = \frac{\mu_0 I}{2\pi a} \hat{n}$	1/2	
34 b	EXPLANATION	1	5
	up to $\frac{dN}{N} = -\lambda dt$	1	
	UP TO $N = N_0 e^{-\lambda t}$	1	
	GRAPH	1	
	GRAPH EXPLANATION	1	
35 a	DIAGRAM	1	5
	EXPLANATION	1	
	UP TO $\vec{E}_{tot} = \vec{E}_+ + \vec{E}_-$	1	
	UP TO $\vec{E}_{tot} = \frac{q}{4\pi\epsilon_0} \left(\frac{1}{(r-a)^2} - \frac{1}{(r+a)^2} \right) \hat{p}$	1	
	UP TO $\vec{E}_{tot} = \frac{1}{4\pi\epsilon_0} \frac{2\dot{p}}{r^3} (r \gg a)$	1	

35 b	FREQUENCY MODULATION	1	5
	ADVANTAGES	2	
	LIMITATIONS	2	
36 a	UP TO $v = \sqrt{\frac{2eV}{m}}$	1	5
	$\lambda = \frac{h}{mv} = \frac{h}{\sqrt{2emV}}$ $\lambda = \frac{12.27}{\sqrt{V}} \text{ \AA}$	1	
	$\lambda = \frac{h}{\sqrt{2mK}}$ K=eV	1	
	FORMULA AND SUBSTITUTION $p = \sqrt{2mK}$	1	
	ANSWER $7.63 \times 10^{-25} \text{ kg m s}^{-1}$	1	
36 b	FIRST EQUATION	1	5
	SECOND EQUATION	1	
	THIRD EQUATION	1	
	FOURTH EQUATION	2	
37 a	DIAGRAM	1	5
	EXPLANATION	1	
	Defination (or) $m = \frac{\beta}{\alpha}$	1	
	UP TO $m = \frac{f_o}{f_e}$	1	
	$L = f_o + f_e$	1	
37 b(i)	DIAGRAM	1/2	5
	EXPLANATION	1/2	
	UP TO $V = IR_s$	1	
	$R_s = R_1 + R_2 + R_3$	1	
37 b(ii)	FORMULA $v_d = \frac{I}{neA}$	1/2	
	SUBSTITUTION	1	

	ANSWER (or) any equivalent value $v_d = 0.03 \times 10^{-3} \text{ m s}^{-1}$	1/2	
38 a	DIAGRAM	1/2	5
	EXPLANATION	1/2	
	UP TO $\frac{n_2}{v'} - \frac{n_1}{u} = \frac{(n_2 - n_1)}{R_1}$	1	
	UP TO $\frac{n_1}{v} - \frac{n_1}{u} = (n_2 - n_1) \left[\frac{1}{R_1} - \frac{1}{R_2} \right]$	1	
	UP TO $\frac{1}{f} = \left(\frac{n_2}{n_1} - 1 \right) \left(\frac{1}{R_1} - \frac{1}{R_2} \right)$	1	
	$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$	1	
38 b	DIAGRAM	1/2	5
	EXPLANATION	1	
	UP TO $V_m^2 = V_R^2 + (V_L - V_C)^2$	1	
	UP TO $I_m = \frac{V_m}{\sqrt{R^2 + (X_L - X_C)^2}}$	1	
	$Z = \sqrt{R^2 + (X_L - X_C)^2}$	1/2	
	$\tan \phi = \frac{V_L - V_C}{V_R} = \frac{X_L - X_C}{R}$	1	
	V.MUTHUSIVAM		
	GHSS SALAIPUDUR'		
	ERODE DT		
	PHONE NUMBER : 9442724476		