

Model Paper for Pre-Target-1

VFSTR - VADLAMUDI	Regd. No.										
	Year	Semester			Branch			Section			
Staff Name:	I	1			AI/ML			28, 34			
Faculty Dept.: Physics	Course: EP			Code: 25PY101			Set-1				
Program Name: B. Tech.	Date: 10.10.25			Time: 11.00 to 12.30 AM (Each Course 30 Minutes)				Pre – T1			

Instructions:

1. Total marks: 10
2. Charge of electron is $1.602 \cdot 10^{-19}C$.
3. Mass of electron is $9.1 \cdot 10^{-31}kg$.

1. Classical Electron Theory (CET) postulates

- I. σ is related to the English letter ____ [1]
- II. What is the independent electron postulate? [1]
- III. The thermal velocity of electron at room temperature is of the order of $10^5 ms^{-1}$. Estimate the kinetic energy of electron in eV . [3]

2. DC Electrical conductivity

- I. Derive the relation between the drift velocity v_d and electric field E . What is the constant of proportionality called in v_d vs E ? [3]
- II. If a potential difference of 0.5V is applied across a copper wire of length 2m, find the drift velocity of electron. [2]
The relaxation time in copper is $3 \cdot 10^{-14}s$.