PAPER ID—10715

B.Tech. EXAMINATION, 2024

(Second Semester)

ELECTRICAL AND ELECTRONICS ENGINEERING

Code : ECE-102

Electronics Engineering-I

Time : 3 *Hours* *Maximum Marks :* 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) Define Wiedmann-Franz law.

(b) What is Continuity Equation ?

(c) Differentiate between clippers and clampers circuit.

(d) Give the application of UJT.

(e) What is Zener Diode ?

(f) What is voltage divider bias ?

(g) What are voltage multiplier circuits ?

7×2=14

2. A sinusoidal voltage of 230 V is applied to a half-wave rectifier circuit through a transformer of turn ratio 25 : 1. The load resistance value is 1 KΩ and diode internal resistance is 10 Ω. Determine (i) Im, Idc and Irms (ii) Rectifier efficiency (iii) dc output power (iv) dc output voltage (v) ac input power (vi) Peak Inverse Voltage. **14**

3. Explain light emitting diodes, semiconductor lasers, and light emitting materials. **14**

4. Explain construction and working of Construction and working of DIAC and TRIAC **14**

5. Draw the input and output characteristics of CE and CB configuration in detail. **14**

6. Calculate operating point for the same characteristics with proper labeling of the diagram of each circuit. **14**

7. What is the difference between JFET and MOSFET ? Explain the working of Depletion type of MOSFET and its characteristics. **14**

(220-EL-211761) Roll No. .....

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1. (a) What is mean free path and mobility ?

(b) What are SI and Ge materials used in semiconductors ?

(c) Differentiate between clippers and clampers circuit.

(d) What is the difference between JFET and MOSFET ?

(e) What is Zener diode ?

(f) What is transistor power dissipation ?

(g) What is small signal model of MOSFET ?

$7 \times 2 = 14$

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3. Explain Photodiodes, photo detectors and solar cell. **14**

4. Explain construction and working of construction and working of SCR (Semiconductor Controlled Rectifier). **14**

5. Explain in detail the CE configuration characteristics input characteristics and output characteristics with proper labelling of the diagram of each circuit. **14**

6. What is the difference between JFET and MOSFET ? Explain the working of Depletion type of MOSFET and its characteristics. **14**

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