

II B. Tech I Semester Supplementary Examinations, October/November - 2020
BASIC ELECTRONICS AND DEVICES
 (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**

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**PART -A**

1. a) What is hall effect? (2M)
- b) What is zener breakdown? (2M)
- c) Draw the circuit of a bridge rectifier. (3M)
- d) What is the need of biasing and mention different types of biasing. (3M)
- e) Define pinch off in a FET. (2M)
- f) Draw the circuit of a wein bridge oscillator. (2M)

**PART -B**

2. a) Explain the following for a semiconductor. (8M)
  - i) Intrinsic concentration
  - ii) Mobility
  - iii) Energy gap
  - iv) Conductivity
- b) Write short notes on generation and recombination of charges in a semiconductor. (6M)
3. a) Explain the energy bend diagram of a P-n diode with a neat sketch. (6M)
- b) Explain i)Diffusion capacitance ii)Transition capacitance. (8M)
4. a) What is the function of the Zener diode in voltage regulator and explain. (6M)
- b) Design a Zener diode regulator to meet following specifications. Unregulated DC input voltage  $V_i=10\pm 20V$  regulated DC output  $V_o=5V$ .  $I_{Zmin}=5mA$ ,  $I_{Zmax}=80mA$ , Load current  $I_L=20mA$ . (8M)
5. Derive all hybrid parameters of a CE transistor amplifier circuit with emitter resistor. (14M)
6. a) Draw the circuit diagram of a Common Source amplifier circuit and explain the importance of each component. (10M)
- b) Draw the small signal model of JFET. (4M)
7. What are the different feedback amplifier topologies and explain them in detail? (14M)