



B.Tech III Semester Regular Examinations, February 2022
BASIC ELECTRONICS
(MECHANICAL ENGINEERING)

Maximum Marks: 70

Date: 23.02.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Define peak inverse voltage of a PN junction diode.
- 2 What is transition capacitance?
- 3 Draw the VI characteristics of a zener diode.
- 4 In what way zener diode differs from PN junction diode?
- 5 State the advantages of bridge rectifier.
- 6 What is the function of filter in AC to DC converter.
- 7 What is meant by thermal run away?
- 8 Give the biasing conditions for a transistor to operate as an amplifier.
- 9 What are universal gate?. Why do we call them so?
- 10 Write the truth table of an Exclusive –OR gate.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 Explain the construction and operation of PN junction diode with its V-I characteristics. 10M
OR
- 12 (a) Explain in detail about static and dynamic resistances of PN junction diode. 5M
(b) Explain the equivalent circuit of PN junction diode 5M
- 13 Explain the construction and operation of SCR with its V-I characteristics. 10M
OR
- 14 Explain the operation of Zener diode with its V-I characteristics. 10M
- 15 With a neat diagram explain the Inductor and capacitor filters in detail. 10M
OR
- 16 Explain the operation of half wave rectifier with neat circuit diagram and necessary waveforms. 10M
- 17 Explain in detail how transistor is used as amplifier and switch with a necessary diagrams. 10M
OR
- 18 Explain in detail about input and output characteristics of CE configuration of a NPN transistor. 10M
- 19 Design a full adder, construct the truth table, simplify the output equations and draw the logic diagram. 10M
OR
- 20 Design a half adder, construct the truth table, simplify the output equations and draw the logic diagram. 10M