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B067313(067)

B.Tech. (Third Semester) Examination
Nov.-Dec. 2020

ELECTRONIC DEVICES and DIGITAL CIRCUITS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : *Attempt all questions. Part (a) is compulsory & Attempt any* ***two*** *parts from (b), (c) and (d) of each questions.*

Unit-I

1. (a) What is static resistance of a diode? 4

(b) Sketch the V-I characteristics of a diode and explain it. 8

(c) Explain the working of a half wave rectifier with circuit diagram and waveforms. 8

(d) Explain Zener breakdown and differentiate it from Avalanche breakdown. 8

Unit-II

2. (a) Why is the base most lightly doped? 4

(b) Draw the circuit diagram and explain the working of a transistor in CB configuration. 8

(c) With a neat diagram explain the V-I characteristics of JFET. 8

(d) Draw and explain the construction and working of a depletion type MOSFET. 8

Unit-III

3. (a) Define universal gates. 4

(b) Simplify the following Boolean function by K-map. 8

$$F = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 10, 12)$$

(c) Explain all logic gates in brief. 8

(d) Explain the basic concept of TTL to implement universal logic gate. 8

Unit-IV

4. (a) Define Combinational circuit with basic block diagram. 4

(b) Explain FULL-ADDER using two HALF Adder with its logic diagram. 8

(c) Define Multiplexer. Explain 2-input and 4-input Multiplexer with suitable block diagram. 8

(d) Define Decoder. Explain 3 to 8 Line Decoder with Block Diagram. 8

Unit-V

5. (a) What is Shift Register? 4

(b) Draw the conversion of JK Flip to RS Flip flop using all necessary steps. 8

(c) Explain parallel in serial out shift register using block diagram. 8

(d) Design a D- Flip Flop using 8

(i) Logic Diagram

(ii) Graphical Symbol

(iii) Truth Table

(iv) Characteristics Table

(v) Excitation Table

(vi) Characteristics Equation (K-map Table)