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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations June 2019

BASIC ELECTRONIC DEVICES

(ECE, EEE)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

- 1 a** Derive the expression for diffusion capacitance of a PN junction diode. 6M
b Calculate the dynamic forward and reverse resistance of PN Junction silicon diode 6M
 when the applied voltage is 0.2V at $T = 300^0\text{K}$ with given $I_o = 2\mu\text{A}$

OR

- 2 a** With neat sketches explain the forward and reverse biasing of a PN Junction diode. 6M
 And draw its V-I Characteristics.
b Derive Poisson and continuity equations 6M

UNIT-II

- 3 a** Explain in detail about IR Emitters and mention its applications. 8M
b Comparison between LED and LCD. 4M

OR

- 4 a** Write notes on TRIAC, DIAC and SCR. 6M
b Describe in detail about the working principle and characteristics of UJT with neat sketches. 6M

UNIT-III

- 5 a** Define Rectification efficiency and derive expression for it for the following 8M
 (i) Half wave rectifier. (ii) Full wave rectifier (iii) Bridge rectifier
b Compare the different types of filter circuits in terms of ripple factors 4M

OR

- 6** A Half wave rectifier has a load of $3.5\text{k}\Omega$. If the diode resistance and the secondary coil. Resistance together have resistance of 800Ω and the input voltage of 240V, Calculate (i) Peak, Average and RMS value of the current flowing, 12M
 (ii) DC Power output,
 (iii) AC Power input and
 (iv) Efficiency of the rectifier

UNIT-IV

- 7 a** Draw the circuit diagram for finding the CC characteristics of a Transistor. 7M
b Draw the Eber-moll model of a transistor. 5M

OR

- 8 a** With the help of neat diagram, explain the operation and characteristics of n-channel enhancement type MOSFET. 8M
b Give the comparison between JFET and MOSFET. 4M

UNIT-V

- 9 a** What is the necessity of Biasing circuits? Derive the expression for stability factor of self bias circuit. 8M
b With neat diagram, explain Voltage Divider Bias Circuit for JFET. 4M

OR

- 10 a** Discuss about Thermal Runaway and Thermal Resistance. 6M
b Explain Collector to Base bias of a Transistor with neat circuit diagram 6M

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