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

B.Tech II Year I Semester Regular and Supplementary Examinations Nov/Dec 2018

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 an expression for Continuity Equation. 6M
b Derive an expression for Fermi level in an intrinsic semiconductor. 6M

OR

- 2 a Explain the Diffusion and Drift currents for a semiconductor. 6M
b Explain about Energy Band Diagrams. 6M

UNIT-II

- 3 a Explain the construction and working of varactor diode? 8M
b Define Holding current and Latching current of SCR 4M

OR

- 4 a Explain the working of Tunnel diode and its V-I characteristics. And what is the sufficient condition for tunneling. 6M
b Explain the construction and working of LCD 5M

UNIT-III

- 5 a A bridge rectifier uses four identical diodes having forward resistance of 5Ω each. Transformer secondary resistance is 5Ω and the secondary voltage of 30V (rms). Determine the DC output voltage for $I_{DC} = 200\text{mA}$ and the value of the ripple voltage 8M
b With neat diagram, explain Bridge Rectifier. 5M

OR

- 6 a Discuss the L Section Filter with neat diagram 5M
b Design Two-section LC filter to provide an output voltage 9V with a load current of 100 mA and the ripple is limited to 0.2%. 7M

UNIT-IV

- 7 a With neat diagram, explain the Input and Output characteristics of a BJT in CE Configuration. 7M
b Explain the construction and working of Enhancement MOSFET. 5M

OR

- 8 a Explain the working of a PNP transistor with a neat diagram. 8M
b Compare CE, CB and CC configurations. 4M

UNIT-V

- 9 a Derive the condition for Thermal Stability to avoid thermal runaway. 6M
b Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point. 6M

OR

- 10 In a Self bias circuit containing $R_1=50\text{K}\Omega$, $R_2=25\text{K}\Omega$, $R_e=1\text{K}\Omega$, $R_C=3\text{K}\Omega$, $\beta=90$, $V_{CC}=12\text{V}$, $V_{BE}=0.7\text{V}$. Find the operating point, S , S' , and S'' . 12M

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