Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Regular Examinations Feb-2021
ELECTRONIC DEVICES AND CIRCUITS
(Common to ECE & EEE)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

1 a Explain about Diode resistances and determine the expression for forward dynamic resistance. **8M**

 b Examine the forward resistance of a PN junction diode when the forward current is 5mA at T = 300 K. Assume Silicon diode. **4M**

OR

2 a List the application of PN junction and Zener diodes. **4M**

 b Determine the expression for Diffusion capacitance of a PN Junction Diode. **8M**

UNIT-II

3 a Draw the circuit diagram of Full wave rectifier with inductor filter and illustrate its operation. Also derive the expression for ripple factor. **7M**

 b Find the value of inductance to be used in the inductor filter connected to a full wave rectifier operating at 60 Hz to provide a dc output with 4% ripple for a 100Ω load. **5M**

OR

4 a Explain dynamic scattering LCD and field effect LCD working with neat diagrams. **7M**

 b Explain working principle and characteristics of LED with neat diagram. Also list the applications of LED. **5M**

UNIT-III

5 a Explain the current components of PNP transistor and deduct the definitions of Emitter Efficiency, Base Transportation Factor and Large signal current gain. **7M**

 b With neat diagram, Interpret the Input and Output characteristics of a BJT in CB Configuration. **5M**

OR

6 Interpret the operation and characteristics of n-channel depletion type MOSFET with diagram. **12M**

UNIT-IV

7 a Define Transistor Biasing and explain the need for Biasing. **5M**

 b Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point. **7M**

OR

8 a Estimate the stability factors S, S' and S'' of a BJT Voltage Divider bias. **12M**

UNIT-V

9 Summarize the expressions for input impedance, output impedance and voltage gain of JFET Common Drain amplifier with neat diagram. **12M**

OR

10 For a CB transistor amplifier driven by a voltage source of internal resistance Rs = 1200Ω, the load Impedance of RL = 1000Ω. The h parameters are hib = 22Ω, hrb = 3 x 10-4, hfb = - 0.98, hob = 0.5μA/V. Find current gain, voltage gain, input impedance and output impedance using exact analysis and approximate analysis. **12M**

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