Code No: 153AT **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, October - 2020
ELECTRONIC DEVICES AND CIRCUITS
(Common to ECE, EIE, MCT)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Explain the operation of Full Wave Rectifier with necessary graphs.
b) Derive the expression for transition capacitance of a diode. [8+7]

2.a) Derive the expression for Ripple factor for Full Wave Rectifier with L-section filter.
b) Explain the working of p-n diode in forward and reverse bias conditions. [8+7]

3.a) Derive the operating point using AC and DC load lines.
b) Explain about Punch through and Base width modulation. [8+7]

4.a) Draw and explain the CE characteristics of a transistor.
b) The reverse leakage current of the transistor when in CB configuration is 0.3μA while it is 16μA when the same transistor is connected in CE configuration. Determine α, β and γ. [9+6]

5.a) With the help of neat diagram explain the voltage divider biasing method for FET.
b) Explain the construction and emitter characteristics of UJT. [8+7]

6.a) Why we call FET as a Voltage Controlled Device.
b) Draw the circuit diagram of SCR and explain its operation along with its characteristics. [7+8]

7.a) Draw and Explain BJT small signal model, compare the performance of CE, CB, CC amplifier.
b) Given I_E= 2.5mA, h_{fe}= 140, h_{oe}= 20μs and h_{ob}= 0.5μs. Determine the common-emitter hybrid equivalent circuit. [8+7]

8.a) Explain the working of MOSFET amplifier and discuss the gain and frequency response characteristics?
b) An n-channel JFET has I_{DSS} =10mA and V_P = - 2V. Determine the drain source resistance r_{ds} for (i) V_{GS} =0V. (ii) V_{GS} = - 0.5V. [8+7]

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