

FACULTY OF ENGINEERING**B.E. 2/4 (ECE) I – Semester (Backlog) Examination, May / June 2019****Subject: Electronic Devices****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part – A and any five questions from Part – B.****PART – A (25 Marks)**

- 1 Differentiate Zener breakdown and Avalanche breakdown
- 2 Define the terms a) Storage time b) Transition time c) Reverse Recovery time
- 3 Explain the purpose of Bleeder resistor.
- 4 A Half Wave Rectifier has a 25 V (rms) ac input and a 1 K Ω load resistance. Calculate peak voltage, load current and peak inverse voltage.
- 5 Draw the input and output characteristics of Common Collector configuration.
- 6 If the emitter current of transistor is 1 mA, assuming $r = 0.98$ find s .
- 7 Write the significance of h-parameters.
- 8 Draw the approximate h-parameter model and write the condition to use approximate model.
- 9 Compare BJT and FET
- 10 An n-channel JFET has $I_{DSS} = 10$ mA, $V_p = -4$ V, determine the drain current I_D at a Gate-Source voltage of -2V.

PART – B (50 Marks)

- 11 a) Explain the working of P-N junction under forward and reverse bias with neat diagrams and describe its V-I characteristics. (6M)
- b) Derive the expression for Diffusion Capacitance of a P-N junction diode. (4M)
- 12 With neat circuit diagrams and necessary waveforms, explain the working of Centre-tapped Full Wave rectifier and derive the expressions for i) r.m.s and d.c components of voltages and currents ii) Ripple factor iii) efficiency iv) TUF. (10M)
- 13 a) Explain the bias stabilization mechanism of self bias circuit. Also derive the expression for stability factor. (7M)
- b) Explain Thermal runaway and also write the condition to avoid thermal runaway. Also write the purpose of heat sink. (3M)
- 14 Analyse CE –BJT amplifier using exact h-parameter model to determine the expressions for A_i , R_i , A_V , R_o , A_p . (10M)
- 15 a) Describe the working principle of Depletion MOSFET along with its drain and transfer characteristics. (7M)
- b) Prove that $g_m = \frac{-2}{V_p} \sqrt{I_D I_{DSS}}$ (3M)
- 16 a) Explain the working of Zener Voltage Regulator. (4M)
- b) Describe the working of Inductor filter and derive its ripple factor. (6M)
- 17 Write short notes on
 - a) Compensation Techniques (4M)
 - b) Silicon Controlled Rectifier (3M)
 - c) FET Biasing (3M)