

Code No: **R20A0402****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, July/August 2023**Electronic Devices & Circuits**

(ECE)

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 **A** Explain the operation of Bridge rectifier. [7M]
 B Compare the performance of Half wave rectifier, Full wave rectifier and Bridge Rectifier. [7M]

OR

- 2 **A** Describe the function of FWR with Capacitor filter with the help of circuit diagram. [7M]
 B Compute ripple factor of an C – section choke input filter used at the output of a Full wave rectifier and capacitor values of the filter are given as 10 H and 8.2 μ F respectively. [7M]

SECTION-II

- 3 **A** Explain the collector to base bias circuit and find the stability factor. [7M]
 B (i) A germanium transistor is to be operated at zero signal $I_C = 1\text{mA}$. If the collector supply $V_{CC} = 12\text{V}$, what is the value of R_B in the base resistor method ? Take $\beta = 100$. [7M]
 (ii) If another transistor of the same batch with $\beta = 50$ is used, what will be the new value of zero signal I_C for the same R_B ?

OR

- 4 **A** Why Self bias circuit is more preferable comparing to Fixed bias circuit? Draw the Voltage divider bias and derive expressions for Thevenin's voltage, Thevenin's resistance and stability factor. [9M]
 B What is Thermal runaway? How it impacts on stability? [5M]

SECTION-III

- 5 **A** The h parameters of the transistor circuit as follows $h_{ie}=4\text{K}\Omega$, $h_{re}=7 \times 10^{-4}$, $h_{fe}=100$, $h_{oe}=50\mu\text{mhos}$. Find h parameters for CB configuration. Find current gain if the load resistance is 1000 Ω . [7M]
 B Draw BJT Hybrid model and define h parameters. [7M]

OR

- 6 **A** Draw the basic transistor amplifier circuit and its equivalent h parameter model. Find its input impedance and output impedance. [7M]
 B Compare various transistor configurations in terms of A_i , R_i , A_v and R_o . [7M]

SECTION-IV

- 7 **A** What are the advantages of negative feedback? Explain. [6M]
 B Describe various feedback topologies with help of block diagrams. Write expression for feedback factor in each case. [8M]

OR

8 **A** Explain briefly about classifications of an Oscillators. **[6M]**

B Illustrate the operation of RC Phase Shift Oscillator and also derive the
 expression for frequency of oscillation. **[8M]**

SECTION-V

9 **A** What are the various FET biasing circuits? Explain briefly. **[7M]**

B Explain the working principle of Photo diode. **[7M]**

OR

10 **A** Describe the principle and operation of Varactor diode. **[8M]**

B List the applications of Varactor diode. **[6M]**
