

Code No: **R18A0401****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, April 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 about formation of PN Junction and how the diode acts as switch. **[7M]**
- B** Explain the breakdown phenomena in zener diode. **[7M]**

OR

- 2 **A** Explain construction and operation of a bridge rectifier and find PIV, RMS current, Rectifier efficiency & Ripple factor. **[7M]**
- B** Discuss how full wave rectification differs from half wave rectification. **[7M]**

SECTION-II

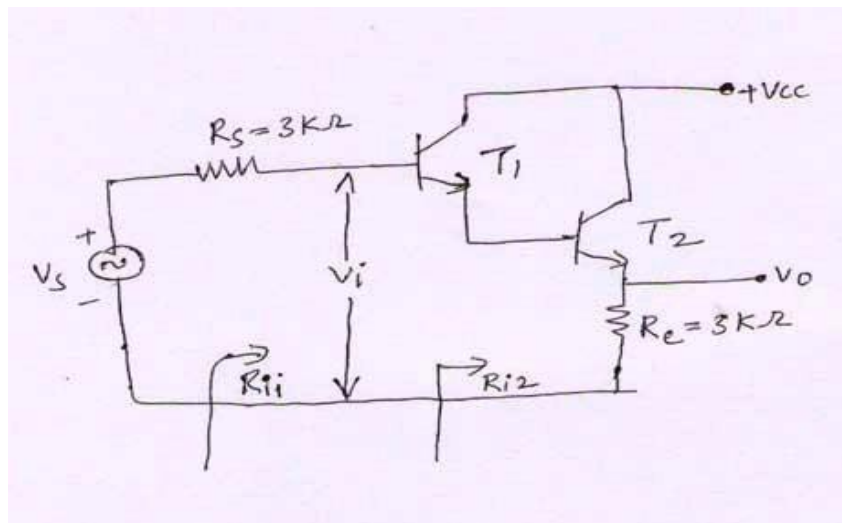
- 3 **A** Explain the need for biasing in electronic circuits. What are the factors affecting the stability factor. **[7M]**
- B** Explain the DC and AC load Line analysis with the help of neat diagrams? **[7M]**

OR

- 4 **A** Explain the input and output characteristics of a transistor in CB configuration. **[7M]**
- B** Explain the hybrid small signal model for common collector configuration. **[7M]**

SECTION-III

- 5 **A** Using approximate h parameter model for a CE circuit obtain the expression for
i) A_i ii) R_i iii) A_v iv) R_o **[7M]**
- B** For the circuit shown in below fig .calculate R_i , A_v , A_i , and R_o for
 $h_{ie}=1K\Omega$,
 $h_{fe}=50$ and $h_{re}=2 \times 10^{-4}$, $h_{oe}= 20\mu A/V$. **[7M]**



OR

6 A What is the condition for thermal stability? [7M]

B A silicon transistor with $\beta=80$ is used in self-biasing arrangement with $V_{CC}=15V$, $R_C=4.7 K\Omega$. The operating point Q is at $V_{CE}=8.2V$, $I_C=1.2$ mA. Find the values of R_1 , R_2 and R_E . [7M]

SECTION-IV

7 A With the help of suitable diagrams, explain the working of n-channel enhancement MOSFET? [7M]

B Compare MOSFET with JFET. [7M]

OR

8 A Explain the working of FET with neat diagram and relevant characteristics. Indicate each region of the characteristics. [7M]

B Explain about punch through effect? [7M]

SECTION-V

9 A Derive an expression for voltage gain of a Common Drain Amplifier. [7M]

B Compare CS, CD JFET amplifiers. [7M]

OR

10 A Explain the two transistor analogy of an SCR. Draw the V-I characteristics of SCR? [7M]

B Explain about Varactor diode with characteristics. [7M]
