

Code No.: EC301PC

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**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**  
**II-B.TECH-I-Semester End Examinations (Supply) - February- 2024**  
**ELECTRONIC DEVICES AND CIRCUITS**  
**(ECE)**

[Time: 3 Hours]

[Max. Marks: 70]

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A**

**(20 Marks)**

1. a) State the static and dynamic resistance of a PN junction diode? [2M]
- b) Define Ripple factor and efficiency? [2M]
- c) Draw the circuit diagram for Common Emitter configuration. [2M]
- d) Define the operating point for BJT? [2M]
- e) Write about pinch-off voltage? [2M]
- f) Draw the symbols of varactor diode and UJT? [2M]
- g) Write the hybrid parameters for CE amplifier circuit? [2M]
- h) How a transistor acts as an amplifier? [2M]
- i) Write the classification of FET along with their symbols? [2M]
- j) Why MOSFET's are known as voltage controlled devices? [2M]

**PART-B**

**(50 Marks)**

2. Explain the VI characteristics of a PN junction diode under forward bias and reverse bias of its operation with neat sketches. [10M]
- OR**
- 3.a) Construct the full wave rectifier circuit and explain its operation. [7M]
  - b) Draw the output response for a full wave rectifier circuit with capacitive filter? [3M]
4. Design the circuit for a common emitter configuration and explain their input and output characteristics along with neat sketches. [10M]
- OR**
5. Explain in detail about the fixed bias technique for a BJT. [10M]
  6. Explain the construction and working principle of operation for n-channel JFET with its characteristics. [10M]
- OR**
7. Explain the operation of a Tunnel diode with its VI characteristics. [10M]
  8. Derive the equations for voltage gain  $A_v$ , current gain  $A_i$ , input impedance  $R_i$  and output impedance  $R_o$  for a BJT using approximate h-parameter model for CE configuration? [10M]
- OR**
9. Draw the circuit diagram of CC amplifier and explain its working operation? [10M]
  10. Obtain small signal model of JFET. What are the parameters of FET? Give their relationship. [10M]
- OR**
11. With the help of suitable diagrams explain the operation of MOSFET. [10M]

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