

Code No.: CS403ES

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**CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS**

**II-B.TECH-II-Semester End Examinations (Supply) - February- 2024  
ANALOG & DIGITAL ELECTRONICS  
(Common to CSE, CSC)**

[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) Define Diffusion capacitance. [2M]
- b) Draw the V-I characteristics of diode. [2M]
- c) What is thermal runaway? [2M]
- d) Define operating point. [2M]
- e) List the JFET parameters? [2M]
- f) What is an electronic gate? [2M]
- g) Define Minterm & Maxterm. [2M]
- h) Draw the truth table of Half adder. [2M]
- i) What is sequential circuit? Give an example. [2M]
- j) What is the difference between Latch and Flip flop? [2M]

**PART-B**

**(50 Marks)**

2. Explain the working of Tunnel diode with help of energy band diagrams and Draw V-I Characteristics. [10M]
- OR**
3. A Half wave rectifier has a load of 3.5 k $\Omega$ . If the diode resistance and the secondary coil resistance together have a resistance of 800 $\Omega$  and the input voltage has a signal voltage of 240 V. Calculate i) Peak, average and rms value of current. ii) DC output power. iii) AC input power. iv) Efficiency of the rectifier. [10M]
4. Draw and explain the input and output characteristics of a transistor in CB configuration. [10M]
- OR**
5. Explain the operation of RC coupled amplifier with suitable diagrams. [10M]
6. With the constructional features, explain the operation of Depletion Mode and Enhancement mode N-channel MOSFET. [10M]
- OR**
- 7.a) Give the classification of logic families.Explain the operation of 2-input TTL NAND gate. [5M]
- b) gate. [5M]
8. Simplify the Boolean expression using K-map and implement using NAND gates  $F(A,B,C,D) = \sum m(0, 2, 3, 8, 10, 11, 12, 14)$ . [10M]
- OR**
9. Explain about 2-bit Magnitude Comparator? [10M]
- 10.a) Write the differences between Combinational & Sequential circuits. [5M]
- b) Explain the Logic diagram of SR flip-flop. [5M]
- OR**
11. Explain about Shift Registers. [10M]

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