

Code No.: CS403ES

R20

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CMR ENGINEERING COLLEGE : HYDERABAD
UGC AUTONOMOUS

II-B.TECH-II-Semester End Examinations (Supply) - February- 2023
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) Draw the Tunnel diode symbol. [2M]
- b) Draw PN Junction diode characteristics. [2M]
- c) Compare CE, CB, CC configurations. [2M]
- d) Draw self-bias circuit diagram. [2M]
- e) Draw MOSFET symbols. [2M]
- f) Explain the De Morgan's theorem. [2M]
- g) Minimize Boolean expression for $AC+A'C+BC$. [2M]
- h) Explain the EX-OR logic gate with truth table. [2M]
- i) Draw SR Flip flop logic diagram. [2M]
- j) Compare synchronous and asynchronous counters? [2M]

PART-B

(50 Marks)

2. Explain the diode switching times and diode resistance and capacitance. [10M]
- OR**
3. Explain the full rectifier with capacitor filter. [10M]
- 4.a) Explain the thermal runaway and stability. [5M]
 - b) Explain the transistor at low frequencies of CE. [5M]
- OR**
- 5.a) Explain the input transistor characteristics of CB configuration. [5M]
 - b) Explain the CE amplifier with near circuit diagram. [5M]
- 6.a) Explain the TTL gates. [5M]
 - b) Explain the FET CD amplifier. [5M]
- OR**
- 7.a) Compare logic families. [5M]
 - b) Explain the low frequency JFET common source- amplifier. [5M]
- 8.a) Minimize Boolean expression using K Map. [5M]
 $F(A, B, C, D) = \sum m(0, 1, 4, 5, 8, 9, 13, 15)$.
 - b) Design Half subtractor. [5M]
- OR**
- 9.a) Convert into standard SOP form for $F(a, b, c) = a'b + a'bc'$. [5M]
 - b) Draw the full adder logic diagram. [5M]
- 10.a) Design of 3 bit up counter using asynchronous (ripple) counter. [5M]
 - b) Explain the SR Flip flop using NAND Latch. [5M]
- OR**
- 11.a) Explain 4 bit SISO shift register. [5M]
 - b) Explain the Random-access memory. [5M]
