CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Supply) - December- 2024
ANALOG & DIGITAL ELECTRONICS
(Common to IT, CSM & AI&DS)

[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 the terms (i) Static Resistance ii) Dynamic Resistance.	[2M]
b)	List the applications of PN junction diode.	[2M]
c)	Compare CB, CE, CC configurations.	[2M]
d)	What is thermal runway?	[2M]
e)	Define the pinch-off voltage. Why the name field effect is used for the device FET?	[2M]
f)	State the important characteristics of TTL family.	[2M]
g)	Define minterm.	[2M]
h)	Draw the truth table of Full Adder.	[2M]
i)	What is Race Around condition?	[2M]
j)	What is state assignment?	[2M]

PART-B   (50 Marks)

2. Draw a half-wave rectifier circuit and explain its operation with its input and output waveforms along with derivations for ripple factor and efficiency.   [10 M]

OR

3. Explain the Operation of Tunnel Diode.   [10M]

4. Explain input and output characteristics of transistor in CB Configuration.   [10M]

OR

5.a) Explain various methods used for coupling of multistage amplifiers with their frequency response.   [6M]

b) Draw and explain equivalent circuit of transistor at low frequencies.   [4M]

6.a) Draw the V-I characteristics of enhancement MOSFET and explain it.   [6 M]

b) Explain the operation of TTL with neat diagram.   [4 M]

OR

7. Explain the construction and principle of operation of N-channel JFET and also draw Drain and transfer characteristics.   [10M]

8.a) Express the function (xy+z) (y+xz) in canonical SOP and POS forms.   [5 M]

b) Implement the following Boolean function with a 16:1 multiplexer.   [5 M]
   $F(A,B,C,D)=\Sigma(1, 3, 4, 11, 12, 13, 14,15)$

OR

9. Explain 2 -bit magnitude comparator.   [10M]

10. Explain the operation of SISO, SIPO, PISO and PIPO shift registers.   [10M]

OR

11. Design a mod-10 asynchronous counter using JK flip flops.   [10M]

****