Code No.: IT301ES   R20   H.T.No. [ ][ ][8][R][ ][ ][ ][ ]

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Supply)- June- 2022
ANALOG & DIGITAL ELECTRONICS
(Common to IT & CSM)

[Time: 3 Hours]   **[Max. Marks: 70]**

Note: 1. Answer *any FIVE questions. Each question carries 14 marks.*
2. *All questions carry equal marks.*
3. *Illustrate your answers with NEAT sketches wherever necessary.*

                                                                      5X14=70

1. a) Explain the working of Photo diode and sketch its Characteristics. [7M]
    b) What is a Comparator Circuit? How does such a circuit differ from a clipping circuit? [7M]

2. a) Compare the characteristics of BJT in CC, CB, CE configurations. [7M]
    b) What are the advantages of multistage Amplifiers? [7M]

3. a) Explain the Differences between BJT and FET. [7M]
    b) Design a 2 input TTL NAND Gate and explain its working. [7M]

4. a) Implement the following function using only NOR gates F=a(b+cd)+bc' [7M]
    b) Simplify the function $f(A, B, C, D) = \sum m(1,2,5,8,10,14)+d(6,7,15)$ by using K-Map [7M]

5. a) Explain Master-Slave JK Flip-Flop and Mention its Advantages. [7M]
    b) Configure a 4-bit Ring Counter using a Universal Shift Register. [7M]

6. a) Explain the term transition capacitance (C_T) of a PN diode. [7M]
    b) Compare the various types of Rectifiers. [7M]

7. a) Derive the relationship between α, β, γ. [7M]
    b) What is Early-effect? Explain why it is called as base-width modulation? Discuss its consequences in transistors in detail? [7M]

8. a) Define Transconductance (g_m), Drain Resistance (r_d), and amplification factor (μ). [7M]
    b) Explain the V-I characteristics of JFET. [7M]

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