Code No.: IT301ES

R20

H.T.No.

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## CMR ENGINEERING COLLEGE: : HYDERABAD UGC AUTONOMOUS

## II-B.TECH-I-Semester End Examinations (Supply)- June- 2022 ANALOG & DIGITAL ELECTRONICS

(Common to IT & CSM)

1. 2.	Hours] Answer any <u>FIVE</u> questions. Each question carries 14 marks.  All questions carry equal marks.	·ks: 70]	
1. 2.	Answer any <u>FIVE</u> questions. Each question carries 14 marks.		
2.	All questions carry equal marks		
3	All questions curry equal marks.		
-	Illustrate your answers with NEAT sketches wherever necessary.		
	5.	X14=70	
a) b)	Explain the working of Photo diode and sketch its Characteristics.  What is a Comparator Circuit? How does such a circuit differ from a clipping circuit?	[7M] [7M]	
a) b)	Compare the characteristics of BJT in CC, CB, CE configurations. What are the advantages of multistage Amplifiers?	[7M] [7M]	
a) b)	Explain the Differences between BJT and FET.  Design a 2 input TTL NAND Gate and explain its working.	[7M] [7M]	
a) b)	Implement the following function using only NOR gates $F=a(b+cd)+bc$ ' 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] [7M]	
a) b)	Explain Master-Slave JK Flip-Flop and Mention its Advantages. Configure a 4-bit Ring Counter using a Universal Shift Register.	[7M] [7M]	
a) b)	Explain the term transition capacitance $(C_T)$ of a PN diode. Compare the various types of Rectifiers.	[7M] [7M]	
	Derive the relationship between $\alpha$ , $\beta$ , $\gamma$ . What is Early-effect? Explain why it is called as base-width modulation? Discuss its consequences in transistors in detail?	[7M] [7M]	
0.00	Define Transconductance $(g_m)$ , Drain Resistance $(r_d)$ , and amplification factor $(\mu)$ . Explain the V-I characteristics of JFET.	[7M] [7M]	
	<ul> <li>a)</li> <li>b)</li> </ul>	<ul> <li>3. Illustrate your answers with NEAT sketches wherever necessary.</li> <li>5. <ul> <li>a) Explain the working of Photo diode and sketch its Characteristics.</li> <li>b) What is a Comparator Circuit? How does such a circuit differ from a clipping circuit?</li> <li>a) Compare the characteristics of BJT in CC, CB, CE configurations.</li> <li>b) What are the advantages of multistage Amplifiers?</li> <li>a) Explain the Differences between BJT and FET.</li> <li>b) Design a 2 input TTL NAND Gate and explain its working.</li> <li>a) Implement the following function using only NOR gates F=a(b+cd)+bc'</li> <li>b) Simplify the function f (A, B, C, D) = ∑m(1,2,5,8,10,14)+d (6,7,15) by using K-Map</li> </ul> </li> <li>a) Explain Master-Slave JK Flip-Flop and Mention its Advantages.</li> <li>b) Configure a 4-bit Ring Counter using a Universal Shift Register.</li> <li>a) Explain the term transition capacitance (C<sub>T</sub>) of a PN diode.</li> <li>b) Compare the various types of Rectifiers.</li> <li>a) Derive the relationship between α, β, γ.</li> <li>b) What is Early-effect? Explain why it is called as base-width modulation? Discuss its consequences in transistors in detail?</li> <li>a) Define Transconductance (g<sub>m</sub>), Drain Resistance (r<sub>d</sub>), and amplification factor (μ).</li> <li>b) Explain the V-I characteristics of JFET.</li> </ul>	a) Explain the working of Photo diode and sketch its Characteristics. b) What is a Comparator Circuit? How does such a circuit differ from a clipping circuit? [7M]  a) Compare the characteristics of BJT in CC, CB, CE configurations. b) What are the advantages of multistage Amplifiers? [7M]  a) Explain the Differences between BJT and FET. b) Design a 2 input TTL NAND Gate and explain its working. [7M]  a) Implement the following function using only NOR gates F=a(b+cd)+bc' [7M]  b) Simplify the function f (A, B, C, D) = ∑m(1,2,5,8,10,14)+d (6,7,15) by using K-Map [7M]  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]  a) Explain the term transition capacitance (C <sub>T</sub> ) of a PN diode. [7M] b) Compare the various types of Rectifiers. [7M]  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?  a) Define Transconductance (g <sub>m</sub> ), Drain Resistance (r <sub>d</sub> ), and amplification factor (μ). [7M] b) Explain the V-I characteristics of JFET. [7M]