Course Code:1930405 MLRS- R19

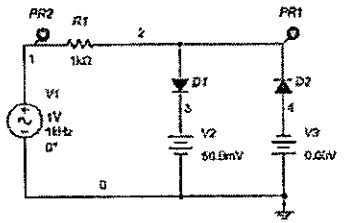
MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Regular End Examination, March 2021
ANALOG AND DIGITAL ELECTRONICS
(CSE & IT)

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

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	How a diode can be used as a switch? Define all its switching times.	7M	CO2	BL 2
	b)	Draw the V-I characteristics of a diode and explain a temperature effects on it.	7M	CO1	BL1
2	a)	Find the output waveform for the following circuit? Indicate all voltage levels.	7M	CO2	BL2



	b)	A single -phase full wave rectifier uses semiconductor diodes. The voltage drop and internal resistance of the diodes may be neglected. Assume an ideal transformer. Prove that one diode conducts for one half cycle and that the other diode conducts for the remaining half cycle of the input line voltage if the load consists of a resistor R in series with an inductor L	7M	CO2	BL3
3	a)	Draw and explain the circuit diagram, input and output characteristics of transistor in Common Base configuration.	9M	CO1	BL1
	b)	Show that the emitter volt-ampere characteristic of a transistor in the active region is given by $I_E = I_0 exp\left(\frac{V_E}{V_T}\right)$ where $I_0 = -I_{E0}/(1-\alpha_N\alpha_I)$	5M	CO1	BL3
4		Derive the equations for gain and output impedance of Common Drain amplifier , Draw its circuit and equivalent circuit diagrams .	14M	CO3	BL2
5	a)	What are the different types of biasing circuits? Explain any one of them with neat circuit diagram	7M	CO3	BL1
	b)	Draw and explain the working of NAND gate in DTL and use truth table	7M	CO6	BL1
6		Find all min terms and design its logic circuit using only NOR gates by the k-map method for the following function. $f(a,b,c,d) = \sum 1,2,5,7,9,10,13,15$	14M	CO4	BL2
7	a)	Design a 3x 8 decoder and draw its logic diagram and waveforms.	7M	CO5	BL3
	b)	Reduce the states for the following state table:	7M	CO4	BL2

Present state	Next State x=0	Next State x=1	Output x=0	Output x=1
A	DA		0	0
B	E A		0	0
C	GF		0	1
D	AD		10	
E	A	D	10	
F	CB		0	0
G	A	E	10	

8		Design a 4-bit up/down synchronous counter using j-k flip-flops and explain its working with neat waveforms.	14M	CO5	BL3

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