PRN:		Course Code :	UEV304

Second Year **B. Tech** End Semester Examination Winter 2023

Analog &Digital Electronics

Day and Date: Tuesday 05/12/2023 Max Marks: **50**

Time : 10.30am to 12.30 pm Duration: **02** hrs

Instructions:All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt any two from the following**			
	a)	Draw the circuit diagram of Colpits oscillator and derive the expression for frequency of oscillation as, $w = \frac{1}{\sqrt{LC_{eq}}}$ where, $C_{eq} = \frac{C_1 C_2}{C_1 + C_2}$	06	L2	CO1
	b)	Draw the circuit diagram of non-inverting amplifier and hence derive the expression for its voltage gain.	06	L3	CO1
	c)	Derive the expression of output voltage of the differential amplifier with its circuit diagram.	06	L3	CO1
Q.2		**Attempt any two from the following**			
	a)	With necessary circuit diagram explain the operation of Op – Amp as triangular wave generator. Also derive its time constant equation as, $T=(4R_1 R_2 C_1)/R_3$	06	L3	CO2
	b)	Explain the working of zero crossing detector with the help of circuit diagram.	06	L2	CO2
	c)	Explain the working of precision half wave and full wave rectifier with the help of op amp.	06	L2	CO2
Q.3		**Attempt the following**			
	a)	Draw the logic symbol and construct the truth table for each of the following gates. 1)Two input NAND gate 2)Three input OR gate	06	L3	CO3
	b)	Explain with figures how NAND gate and NOR gate can be used as Universal gate.	07	L2	CO3
		or			
	b)	Draw the circuit diagram for following equation using logic gates 1) $Y=ABC^I$ 2) $Y=AB^I+B^IC$	07	L2	CO3
Q.4		**Attempt the following**			
	a)	What is meant by Multiplexer? Explain with diagram and truth table the Operation of 4-to-1 line multiplexer	06	L2	CO4
	b)	What is meant by Decoder? Explain 3-to-8 line decoder with diagram and truth table.	07	L2	CO4
		or			
	b)	What is the function of shift register? With the help of simple diagram explain its working.	07	L2	CO4

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