PRN:		Course Code:	UEV304

Second Year **B. Tech** Semester End Examination Winter 2024

Analog and Digital Electronics 00•23)

Day and Date: Fri 29 NOV 2024 Max Marks: **50**

Time: 10:30AM To 12:30PM Duration: **02** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt any two of the following.**			
	a)	Draw the circuit diagram of inverting amplifier and derive the expression for its voltage gain.	06	L2	CO1
	b)	Derive the expression of output voltage of the differential amplifier with its circuit diagram.	06	L3	CO1
	c)	Describe the operation of any one oscillator with an example.	06	L3	CO1
Q.2		**Attempt any two of the following.**			
	a)	Illustrate the working of zero crossing detector with the help of circuit diagram.	06	L2	CO2
	b)	Describe the working of precision half wave and full wave rectifier with the help of op amp.	06	L3	CO2
	c)	With a suitable circuit diagram explain the operation of Op-amp as a triangular wave generator.	06	L3	CO2
Q.3		**Attempt the following.**			
	a)	Draw the logic symbol and construct the truth table for each of the following gates. i) NAND gate ii) NOR gate iii) Ex-OR gate	06	L1	CO3
	b)	Convert following number to required number system. i) $(175)_{10}$ to (_____) 2 ii) $(1011011)_2$ to (_____) 10	07	L4	CO3
		OR			
	b)	State and prove De-Morgan's theorem of Boolean algebra.	07	L4	CO3
Q.4		**Attempt the following.**			
	a)	With logic diagram and truth table explain the working of following Flip-flops. i) S-R Flip flop ii) J- K Flip flop iii) T- Flip flop	06	L3	CO3
	b)	What is meant by Multiplexer? Explain with diagram and truth table the operation of 4-to-1line multiplexer.	07	L4	CO3
		OR			
	b)	Illustrate the operation of a 3-to-8 line decoder with diagram and truth table.	07	L4	CO3

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