Roll No. _____

END SEMESTER EXAMINATION
SEMESTER- IV

COURSE CODE :EEE501 | **DURATION : 3 (THREE)HRS**
COURSE TITLE : ANALOG ELECTRONICS | **MAXIMUM MARKS : 75**
SESSION : JULY_DEC'2021 | **PASS MARKS : 35 %**

NOTE: *1. Attempt any 05 (five) questions.*
2. Mark for each question is shown against it.
3. Assume suitable logical data wherever necessary.

1.	**(a)**	Determine the output voltage of a differential amplifier for the input voltages of 300μV and 240 μV. The differential gain of the amplifier is 5000 and the value of the CMRR is	**(06)**
	(b)	List out the merits and demerits of ICs.	**(04)**
	(c)	List out the difference between linear and digital ICs.	**(05)**
2.	**(a)**	A sine wave of 0.5 V peak voltage is applied to an inverting amplifier using R_1=10 kΩ and R_f=50 kΩ. It uses the supply voltage of ± 12 V. Determine the output and sketch the waveform. If now, the amplitude of sine wave is increased to 5V, what will be the output? Is it practically possible? Sketch the waveform.	**(09)**
	(b)	Differentiate between active and passive differentiator circuit.	**(06)**
3.	**(a)**	Define electronic timer. List out some of its applications.	**(2+2)**
	(b)	Draw the block diagram of IC 555 timer and explain its operating principle.	**(08)**
	(c)	List out the applications of IC 555.	**(03)**
4.	**(a)**	Illustrate the principle of operation of PLL with its capture range and lock range.	**(06)**
	(b)	Discuss in detail any two applications of PLL.	**(05)**
	(c)	Explain the working of an inverting Schmitt trigger and draw its transfer characteristics	**(04)**
5.	**(a)**	Distinguish between inverting and non-inverting amplifier.	**(06)**
	(b)	Draw the circuit diagram of voltage follower circuit and explain the use of it.	**(05)**
	(c)	What are the advantages of active filters over passive filters?	**(05)**
6.	**(a)**	Define op-amp inverting amplifier.	**(02)**
	(b)	Derive the expression for the voltage gain of op-amp inverting amplifier.	**(06)**
	(c)	Distinguish between inverting and non-inverting amplifier.	**(05)**
	(d)	Explain the use of voltage follower circuit.	**(02)**
7.	**(a)**	Define op-amp subtractor. Show that the output of the subtractor is proportional to the difference between the two input voltages.	**(2+5)**
	(b)	What is an active integrator? With neat diagram explain the working of an active integrator.	**(2+6)**
8.	**(a)**	Define upper and lower threshold voltages of Schmitt trigger.	**(05)**
	(b)	Explain the working of non-inverting Schmitt trigger with circuit diagram and waveforms.	**(05)**
	(c)	List out the applications of Schmitt trigger.	**(05)**

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