Vivekananda College of Engineering & Technology, Puttur [A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®] Affiliated to VTU, Belagavi & Approved by AICTE New Delhi			
CRM08	Rev 1.11	EC	22/08/22

CONTINUOUS INTERNAL EVALUATION - 3

Dept:EC	Sem / Div:IV A	Sub:Analog Circuits	S Code:18EC42
Date:30/08/2022	Time: 3:00-4:30 pm	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

QN		Questions	Marks	RBT	CO's
		PART A			
1	a	Explain the working of op-amp Non inverting amplifier. Derive the expression gain both exact and ideal analysis and get expressions for Rif, Rof and fof	9	L2	CO4
	b	For an inverting Schmitt Trigger circuit R_1 = 15KΩ ; R_2 = 1KΩ and V_{in} = $10V_{p\text{-}pp}$ sine wave. The saturation voltages are ± 14V and V_{ref} = 2 V. i) Determine the threshold voltages V_{ut} and V_{lt}. ii) Find the value of Hysteresis voltage V_{hy}.	6	L2	CO4
	c	What is an instrumentation amplifier? What are its applications? With a neat circuit diagram explain an instrumentation amplifier using a transducer bridge.	10	L3	CO4
		OR			
2	a	Derive the expression for closed loop voltage gain, input and output resistance of inverting Amplifier. The opamp 741C is connected as an inverting amplifier with R1=1kΩ and RF=4.7kΩ. Compute the closed loop parameters: AF, RIF, ROF, fF. . Given A=400000, Ri=33MΩ and RO=60Ω; supply voltages are ± 13V; Max output voltage swing = ± 13V, Unity gain bandwidth = 0.6MHz .	10	L2	CO4
	b	Explain the operation of 4-bit R-2R DAC with neat circuit. For the R-2R DAC, with R=10kΩ and R_F=20kΩ and V_{REF}=5V, determine the output voltage when the inputs b0=b1=5V and	9	L3	CO4

		b2=b3=0V			
	c	Explain the working of a Successive Approximation type of ADC.	6	L2	CO4
		PART B			
3	a	Derive an Expression for the output of a inverting Summing amplifier with three inputs and averaging amplifier	10	L2	CO4
	b	Explain the operation of a monostable multivibrator with relevant diagrams and waveforms.	10	L2	CO4
	c	Write the difference between Inverting and Non Inverting amplifier.	5	L2	CO4
		OR			
4	a	Explain the basic comparator circuit using an opamp. How can this circuit be used in an application as a zero crossing detector?	10	L2	CO4
	b	Design an Astable Multivibrator using 555 timer having output frequency of 10KHz with a dutyCycle of 25%.	6	L3	CO4
	c	Explain the working of a second order high pass Butterworth filter with a neat circuit diagram and frequency response. Write the relevant design equations.	9	L2	CO4

Prepared by: Nisha G R

HOD