CONTINUOUS INTERNAL EVALUATION– 3

Dept:EC	Sem / Div:IV B	Sub:Analog Circuits	S Code:18EC42
Date:22/07/2021	Time: 2:00-3:30 pm	Max Marks: 50	Elective:N

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

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QN		Questions	Marks	RBT	COs
		PART A			
1	a	How does negative feedback affect the performances of an inverting amplifier using opamp? Derive the relevant expressions for Gain, input resistance and output resistance	8	L2	CO4
	b	Explain the operation of 4-bit Binary weighted DAC with neat circuit. For the Binary weighted DAC, with R=10kΩ and R_F=1kΩ and V_{REF}=5V, determine the output voltage when the inputs b0=b2=0V and b1=b3=5V	8	L3	CO4
	c	What is an instrumentation amplifier? What are its applications? With a neat circuit diagram explain an instrumentation amplifier using a transducer bridge.	9	L2	CO4
2	a	Draw the circuit and waveforms for an inverting Schmitt Trigger using opamp, with relevant expressions.	10	L2	CO4
	b	Draw the circuit of second order high pass filter and explain its operation.	9	L2	CO4
	c	For an opamp non-inverting amplifier using 741 IC with R_L=1 KΩ and R_F=10KΩ, A= 200,000; Ri=2MΩ, Ro = 75Ω, fo =5 Hz; supply voltages ±15V, output voltage swing = ±13V, Compute A_F, R_{if}, R_{of}, f_F.	6	L3	CO4
3	a	Explain summing,scaling and averaging amplifier in inverting configuration	8	L2	CO4
	b	Draw the circuit and frequency response of a first order low pass filter. Design a first order low pass filter to have a cutoff frequency of 1kHz with a passband gain of 2.	10	L3	CO4
	c	Explain the R-2R DAC with a neat sketch.	7	L2	CO4
4	a	The opamp 714C 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	L3	CO4
	b	Explain the working of a Successive Approximation type of ADC.	9	L2	CO4
	c	Explain with a neat circuit diagram, the working of a positive small signal half wave precision rectifier using an Opamp.	6	L2	CO4