Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) • EXAMINATION – WINTER 2016

Subject Code:2141706 **Date:23/11/2016**

Subject Name:Analog Signal Processing

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1		Short Questions	14
	1	What is notch filter?	1
	2	What is SVRR?	1
	3	Draw the circuit for input offset voltage compensating network for inverting amplifier.	1
	4	Explain the term “virtual ground”.	1
	5	Give the equation for voltage gain AF in terms of open loop gain and feedback circuit gain for voltage series feedback amplifier.	1
	6	What is the gain of op amp in open loop configuration?	1
	7	Draw the diagram of dual input, unbalanced output differential amplifier.	1
	8	What is the function of threshold voltage in 555 timer?	1
	9	What is the significance of slew rate?	1
	10	What is the use of all pass filter ?	1
	11	Give the typical values for input offset voltage and input offset current for op amp IC 741C.	1
	12	Draw the equivalent circuit of op amp.	1
	13	Why should the CMRR of op amp be very high?	1
	14	Draw the circuit diagram of logarithmic amplifier.	1
Q.2	(a)	State the characteristics of an ideal op amp.	03
	(b)	Explain any one application of monostable multivibrator using 555timer.	04
	(c)	Draw the block diagram of 555 timer and explain the function of each block.	07
		OR	
	(c)	Explain the working of 555 timer as an astable multivibrator with block diagram and waveforms.	07
Q.3	(a)	Draw the circuit for Current to voltage converter and get the equation for output voltage.	03
	(b)	Draw the block diagram of VCO and explain its working.	04
	(c)	Draw the circuit diagram of R-2R ladder type D/A converter and explain how digital input is converted into analog form.	07
		OR	
Q.3	(a)	How can we measure common mode rejection ratio(CMRR)? Draw the set up and explain.	03
	(b)	Explain how behavior of active filters changes with respect to their order using suitable figures.	04
	(c)	Draw the block diagram of 9400 V/F converter and explain its operation with necessary waveforms.	07
Q.4	(a)	Explain with necessary diagrams the working of AC inverting amplifiers with single supply voltage.	03

	(b)	Draw the circuit diagram of differentiator using op amp. Derive the equation for gain.	04
	(c)	Write a short note on RC phase shift oscillator.	07
		OR	
Q.4	(a)	Draw the circuit of wide band reject filter and explain its response.	03
	(b)	Give the design procedure for V/F converter using 9400.	04
	(c)	Explain the working of quadrature oscillator.	07
Q.5	(a)	Explain in brief "thermal drift" with respect to op amp.	03
	(b)	Draw sample and hold circuit using op amp. Draw waveforms and explain its operation.	04
	(c)	Draw the circuit of instrumentation amplifier using three op amps. Derive the equation for gain.	07
		OR	
Q.5	(a)	Draw negative clipper circuit with reference voltage using op amp and explain its operation with waveforms.	03
	(b)	Draw the circuit of window detector. Explain its working.	04
	(c)	Draw and explain the working of isolation amplifier.	07