Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – IInd - Examination – June/July- 2011

Subject code: 1720302

Subject Name: Advance Instrumentation

Date:24/06/2011 **Time: 10:30 am – 01:00 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	**(a)**	Which parameters and components are effective for offset voltage? How offset voltage can be minimized or nullify?	**07**
	(b)	How output impendence of inverting amplifier is reduced by loop gain?	**07**
Q.2	**(a)**	How capacitance of capacitor can affect the rate of change of output voltage?	**07**
	(b)	Derive an equation of Impedance of Non-Inverting amplifier circuit?	**07**
		OR	
	(b)	Draw and explain switched capacitor filter circuit.	**07**
Q.3	**(a)**	Compare between active and passive filter	**07**
	(b)	"There is no common mode error for inverting amplifier" Justify the statement.	**07**
		OR	
Q.3	**(a)**	Design a Butterworth low pass filter using Sallen-Key configuration. Stop band attenuation is Amin = 54dB. Pass band attenuation is Amax= 3 dB. The pass band frequency where attenuation is Amax isFc= 10 Khz. Stop band frequency is 18 KHz. Overall gain is unity. Value of capacitor should not be equal.	**07**
	(b)	List the noise and explain any three.	**07**
Q.4	**(a)**	Draw and explain differentiating circuit with output equation and input-output waveform.	**07**
	(b)	Design 7th order Butterworth high pass filter for fc= 5 Khz and H0= 0 db.	**07**
		OR	
Q.4	**(a)**	Why instrumentation amplifier is preferable for low voltage signal amplification? Give your answer with necessary reasons with its equations	**07**
	(b)	Design the second order band reject filter for center frequency of fitler is Fc= 50 Hz and bandwidth of filter is Fb = 5 Hz and gain of the filter is A= 1.	**07**
Q.5	**(a)**	Derive and explain an equation for V-I converter along with circuit diagram.	**07**
	(b)	Design 4th order high pass butter worth filter for unity gain and 3 dB cutoff frequency Fc= 668 Hz.	**07**
		OR	
Q.5	**(a)**	Explain Source of Noise	**07**
	(b)	Draw and explain current amplifiers circuit with equation.	**07**

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