Time: 3 Hours Max. Marks: 80

NB:
1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

			Marks
Q.1	Attempt any four		
	a.	Define following OPAMP parameters. 1) C.M.R.R 2) Input offset current 3) Input offset voltage 4) Input bias current 5) Output resistance	5
	b.	Explain zero crossing detector with circuit diagram and waveforms.	5
	c.	What are active filters? State its advantages over passive filters.	5
	d.	Explain 78XX series voltage regulator.	5
	e.	Explain any five specification of DAC converter.	5
Q.2.	a.	Design a differentiator to differentiate input signal that varies in Frequency from 10 Hz to about 1 kHz	10
	b.	Design second order high pass filter using OPAMP at f0= 1KHZ and with gain at 2.	10
Q.3.a		Write different types of ADC and explain any one in detail.	10
	b.	Explain monostable timer circuit and design a monostable 555 timer circuit to produce an output pulse 10 sec wide.	10
Q.4.a.		Design an inverting Schmitt trigger to achieve UTP=2V and LTP= -2V. Draw output waveform for Sine wave Input.	10
	b.	Explain with a functional block diagram the principle of operation of 723 regulators. What are the important characteristics of this voltage regulator IC?	10
Q.5.a		Explain PLL using block diagram of 565 PLL.	10
	b.	Design a RC phase shift oscillator to have output frequency of 600Hz. Use ± 15V supply.	10
Q.6		Write notes on following (**Any two)** a) Explain Current converters using Op-amp. b) Three op-amp Instrumentation Amplifier. c) Voltage controlled Oscillator (VCO).	10 10 10
