Code No: RT31026   **R13**   SET - 1

III B. Tech I Semester Supplementary Examinations, May -2018
LINEAR & DIGITAL IC APPLICATIONS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
      2. Answering the question in **Part-A** is compulsory
      3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	List the advantages of ICs over discrete components?	[3M]
	b)	Define input offset current and input offset voltage	[4M]
	c)	Give the important features of an instrumentation amplifier.	[4M]
	d)	Define capture range and lock range?	[4M]
	e)	Draw the circuit of first order active filter.	[3M]
	f)	Compare successive approximation ADC with dual slope ADC.	[4M]

PART -B

2	a)	What is a differential amplifier? Mention the classification of differential amplifier with neat diagrams.	[8M]
	b)	Explain ac analysis of dual input balanced output differential amplifier configuration.	[8M]
3	a)	What is an operational amplifier? Give its symbol and also draw its electrical equivalent circuit.	[8M]
	b)	An op-amp has a slew rate of 2V/μs. What is the maximum frequency of an output sinusoid of peak value 5V at which the distortion sets in due to the slew rate limitation?	[8M]
4	a)	With a neat sketch explain the instrumentation amplifier	[8M]
	b)	Draw the circuit of a voltage to current converter if the load is i) floating and ii) Grounded. Are there any limitations as the size of the load when grounded?	[8M]
5	a)	Draw the block diagram of NE/SE565 PLL and explain the operation with the help of waveforms.	[8M]
	b)	What is meant by VCO? Explain in detail and state the applications of VCO?	[8M]
6	a)	Plot and explain frequency response of i) Low pass Butter worth filter ii) High pass filter iii) Band pass filter iv) Band Reject filter	[8M]
	b)	Design a second order Low Pass Filter at a high cut off frequency of 2 KHz. Draw the frequency response and the circuit with all components.	[8M]
7	a)	Compare different types of A-D converters	[8M]
	b)	Find the voltage at all nodes 0, 1, 2 … and at the output of a 5-bit R-2R ladder DAC. The LSB is 1 and all other bits are equal to '0'. Assume V_R = -10V and R = 10 kΩ	[8M]

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