Code No: RT31042 **R13** SET - 1

III B. Tech I Semester Regular Examinations, November - 2015
LINEAR IC APPLICATIONS
(Common to ECE, EIE and ECompE)

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)	Define differential amplifier and draw its block diagram.	[3M]
	b)	Define CMMR and give its ideal and practical values.	[4M]
	c)	Draw the non inverting op-amp circuit diagram and derive its output voltage.	[3M]
	d)	Draw the circuit diagram of all pass filter and write its output voltage equation.	[4M]
	e)	Draw the pin diagram of IC 555 and explain each pin.	[4M]
	f)	List out different Analog to digital convertors and justify which A/D convertor is best in terms of speed.	[4M]

PART -B

2	a)	Derive the Differential Amplifier- AC analysis of single input dual output Configuration in detail.	[8M]
	b)	Explain the concept of level translator in detail.	[8M]
3	a)	Explain the terms (i) slew rates (ii) CMRR (iii) PSRR (iv) drift and list out ideal and practical characteristics of above parameters.	[8M]
	b)	Explain the operation of Op-amp along with block diagram in detail.	[8M]
4	a)	Draw the circuit diagram of differentiator by using IC 741 and explain its operation.	[8M]
	b)	Explain the summer and difference amplifier using IC 741 and explain its operation.	[8M]
5	a)	Draw the block diagram of Sample & Hold amplifier and explain its operation in detail.	[8M]
	b)	Explain the operation of 2^{nd} order band reject filter along with circuit diagram.	[8M]
6	a)	Draw and Explain the principles and description of individual blocks of PLL in detail.	[8M]
	b)	Explain the terms frequency multiplication, frequency translation of PLL.	[8M]
7	a)	Draw the block diagram of inverted R-2R DAC and explain its operation in detail.	[8M]
	b)	List out the DAC and ADC Specifications and compare them in detail.	[8M]

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Code No: RT31042 **R13** SET - 2

III B. Tech I Semester Regular Examinations, November - 2015
LINEAR IC APPLICATIONS
(Common to ECE, EIE and ECompE)

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)	Explain the purpose of level translator in differential amplifier.	[3M]
	b)	Draw the op-amp block diagram and explain the functions of each block.	[4M]
	c)	Draw the integrator circuit and derive its output equation.	[3M]
	d)	Define filters and draw the output characteristics of LPE and BPF filters.	[4M]
	e)	Draw the functional block diagram of IC 555 in detail.	[4M]
	f)	Define the terms Linearity and accuracy of A/D convertors.	[4M]

PART -B

2	a)	Derive the Differential Amplifier- AC analysis of Dual input single output Configuration in detail.	[8M]
	b)	Explain the Properties of other differential amplifier configuration in detail.	[8M]
3	a)	Explain the Frequency Compensation techniques of op-amp in detail.	[8M]
	b)	Draw the IC 741 op-amp pin diagram and explain the function of each pin in detail.	[8M]
4	a)	Draw the block diagram of log Amplifiers and explain its operation in detail.	[8M]
	b)	What are the limitations of log amplifier and how to overcome those limitations explain in detail.	[8M]
5	a)	Draw the block diagram of Four Quadrant multiplier and explain its operation in detail.	[8M]
	b)	Draw the 2^{nd} order band pass filter and draw its frequency response in detail.	[8M]
6	a)	Draw the astable applications of Schmitt Trigger and explain its operation in detail.	[8M]
	b)	Draw the circuit diagram of FSK demodulators and explain its operation in detail.	[8M]
7	a)	Draw the block diagram of dual slope ADC and explain its operation in detail.	[8M]
	b)	Draw the circuit diagram of weighted resistor DAC and explain its operation in detail.	[8M]

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Code No: RT31042 **R13** SET - 3

III B. Tech I Semester Regular Examinations, November - 2015
LINEAR IC APPLICATIONS
(Common to ECE, EIE and ECompE)

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)	Draw the differential amplifier block diagram and list out each block name.	[3M]
	b)	List out ideal and practical characteristics of Op-amp.	[4M]
	c)	Draw the precision rectifier circuit diagram.	[3M]
	d)	List out the applications of analog switches.	[4M]
	e)	Draw the block diagram of PLL and list out each block name.	[4M]
	f)	What are the basic DAC techniques?	[4M]

PART -B

2	a)	Derive the Differential Amplifier- DC analysis of Dual input Balanced output Configuration in detail.	[8M]
	b)	Explain the concept of Cascade Differential Amplifier Stages in detail.	[8M]
3	a)	Explain the IC 741 op-amp block diagram & its features in detail.	[8M]
	b)	List out the applications and Temperature ranges of IC 741 Op-amp.	[8M]
4	a)	Explain the operation of Square wave generators along with circuit diagram.	[8M]
	b)	Draw the block diagram of Non- Linear function generation and explain its operation.	[8M]
5	a)	Draw the block diagram of balanced modulator and explain its operation in detail.	[8M]
	b)	Draw the 2nd order band pass filter and explain its operation in detail.	[8M]
6	a)	Draw the block diagram of Astable operations using IC 555 and derive its time constant.	[8M]
	b)	Draw the circuit diagram of VCO 566 and explain its operation.	[8M]
7	a)	Draw the block diagram of successive approximation ADC and explain its operation in detail.	[8M]
	b)	Draw the circuit diagram of counter type ADC and explain its operation in detail.	[8M]

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Code No: RT31042 **R13** SET - 4

III B. Tech I Semester Regular Examinations, November - 2015
LINEAR IC APPLICATIONS
(Common to ECE, EIE and ECompE)

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)	Explain different properties of differential amplifier.	[3M]
	b)	Explain different Package Types of op-amps.	[4M]
	c)	Draw the V to I and I to V convertor.	[3M]
	d)	List out the features of IC 1496 balanced modulator.	[4M]
	e)	What are the various applications of VCO 566?	[4M]
	f)	List out the DAC and ADC specifications in detail.	[4M]

PART -B

2	a)	Draw the dual input and dual output differential amplifier and derive its ac characteristics in detail.	[8M]
	b)	Draw the circuit diagram of level translator and explain its operation in detail.	[8M]
3	a)	Explain different frequency compensation techniques of op-amp in detail.	[8M]
	b)	Explain the terms (i) Input & Out put Off set voltages & currents, (ii) slew rates, (iii) CMRR and (iv) PSRR.	[8M]
4	a)	Draw the Instrumentation amplifier and explain its operation in detail.	[8M]
	b)	Draw the Anti log Amplifiers circuit diagram and derive its output voltage in detail.	[8M]
5	a)	Draw the circuit diagram of Sample & Hold amplifier and explain its operation in detail.	[8M]
	b)	Draw the circuit diagram of All pass filters and derive its output response.	[8M]
6	a)	Draw the circuit diagram of Monostable multivibrator by using IC 555 timer and explain its operation.	[8M]
	b)	Draw the block diagram of PLL and explain the operation of individual blocks in detail.	[8M]
7	a)	Draw the block diagram of parallel Comparator type ADC and explain the operation of it.	[8M]
	b)	Draw the block diagram of R-2R ladder DAC and explain its operation.	[8M]

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