Code No: 115AH **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2017
IC APPLICATIONS
(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define Linear and Digital ICs.	[2]
b)	Classify the ICs.	[3]
c)	Define CMRR.	[2]
d)	What is the necessity of a sample & hold circuit?	[3]
e)	List different types of Filters.	[2]
f)	State the Barkhausen criterion.	[3]
g)	Mention the applications of the Schmitt trigger.	[2]
h)	What is the importance of Pin 5 of IC 555?	[3]
i)	List the various A/D conversion techniques.	[2]
j)	List the draw backs of Binary weighted Resistor technique D/A conversion.	[3]

PART - B

(50 Marks)

2.a) Draw the circuit diagram of Open Collector 2-input NAND gate and with the help of functional table explain its operation.
b) Compare the characteristics of various logic families with respect to Power Dissipation, Propagation Delay, Fan-in and Fan-out. [6+4]

OR

3. Explain how CMOS-TTL interfacing can be achieved. Give the input and output levels of voltages and explain the same. [10]

4. Explain the four Differential Amplifier configurations. [10]

OR

5.a) The input signal to an op-amp is $0.03 \sin 1.5 \times 10^5 t$. What can be the maximum Gain of an Op-Amp with the slew rate of 0.4 V / µsec?
b) Explain how a Multiplier can be used as a voltage divider. [5+5]

6.a) Discuss the amplitude stabilization of Phase shift Oscillator.
b) Design and draw the circuit diagram of a Wein bridge Oscillator using op-amp to produce sustained oscillations of a time period of 0.1 m sec. [3+7]

OR

7. Obtain the Transfer function of the first order High pass Butter worth filter. [10]

8.a) Draw the circuit and explain how IC555 can be used for Pulse Position Modulation (PPM).

b) Explain the functioning of 555 in Monostable configuration. [5+5]

OR

9. Describe any four applications of Phase Locked Loop with the help of suitable circuit diagrams. [10]

10.a) Describe Parallel Comparator type ADC operation.

b) Explain the working of Inverted R-2R ladder D/A converter. [5+5]

OR

11.a) Find out the Step size and Analog output when input is 0011 and 1011. Assume V_{ref} = +5V.

b) Explain Successive Approximation ADC with the help of block diagram. [4+6]