Code No: 115AH **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 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)	Realize EX-OR gate with CMOS circuit.	[2]
b)	Mention the reasons why open loop is not preferred for linear applications.	[3]
c)	List out the ideal characteristics of op-amp.	[2]
d)	Write the features of 741 op-amp.	[3]
e)	Mention the differences between band pass and Band Reject filter.	[2]
f)	Mention the blocks present in IC565.	[3]
g)	What are the modes of operation of a Timer?	[2]
h)	List various applications of IC 555 Timer.	[3]
i)	Explain how Dual-slope ADC provides noise rejection?	[2]
j)	Compare R-2R and Weight Resistor types of ADC.	[3]

PART - B

(50 Marks)

2.a) Design a TTL 2-state NAND gate and explain its operation.
b) Draw the resistive model of a CMOS inverter and explain its behaviour for LOW and HIGH outputs. [5+5]

OR

3.a) Classify IC s and write about the Chip size.
b) Explain about the TTL driving CMOS gate. [5+5]

4.a) Derive input resistance for inverting amplifier with feedback arrangement.
b) What is the operation performed by an inverting Op-Amp amplifier if its feedback resistance is replaced by a capacitance? Explain the functioning of such circuit. What are the practical difficulties associated with this circuit? [5+5]

OR

5.a) An IC op-amp 741 used as an inverting amplifier with a gain of 100. The voltage gain vs frequency characteristic is flat up to 12 kHz. Find the maximum peak to peak input signal that can be feed without causing any distortion to the output.
b) Explain the operation of V to I converter. [5+5]

6.a) Derive the expression for the transfer function of first order high pass filter.
b) Draw the schematic diagram of Wein bridge oscillator and explain its working. [5+5]

OR

7.a) Explain the operation of VCO.
b) Discuss about the operation of Wein Bridge Oscillator. [5+5]

8.a) Describe the functional block diagram of 555 timer.
b) How 555 timer can be used in Schmitt Trigger circuit. [5+5]

OR

9.a) With a neat diagram explain the operation of PLL.
b) Write about the applications of PLL. [5+5]

10.a) Explain the operation of Successive approximation ADC.
b) Write about the ADC specifications. [5+5]

OR

11.a) Discuss about the binary weighted resistor DAC.
b) Mention the applications of DAC and ADC. [5+5]

---ooOoo---