R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, May - 2018
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)	List the parameters which are used to compare logic families.	[2]
b)	Draw the diagram of basic gate of 2 input TTL gate.	[3]
c)	Define thermal drift.	[2]
d)	How fast can the output of an op-amp change by 10V, if its slew rate is 1V/μs?	[3]
e)	What are the limitations of active filters?	[2]
f)	Give the principle of operation of VCO.	[3]
g)	List the applications of PLL.	[2]
h)	Define pull in time and lock range of PLL.	[3]
i)	What is meant by resolution of DAC?	[2]
j)	What is the conversion time of counting type ADC and parallel comparator ADC?	[3]

PART - B

(50 Marks)

2.a)	Explain the operation of a CMOS transmission gate.	
b)	Classify ICs based on application, device used and chip complexity.	[5+5]
	OR	
3.a)	Discuss the IC interfacing for the case CMOS driving TTL.	
b)	Write short notes on tristate TTL.	[5+5]
4.a)	Explain the operation of I-V converter.	
b)	Explain the operation of an integrator using op-amp.	[5+5]
	OR	
5.a)	Explain the operation of instrumentation amplifier.	
b)	Explain the operation of multiplier using op-amp.	[5+5]
6.	Explain the principle of operation of RC phase shift oscillator and obtain the expression for frequency of oscillation.	[10]
	OR	
7.a)	Explain the operation of triangular waveform generator using op-amp.	
b)	Design a notch filter so that f_o = 8kHz, Q =10. Choose C = 500pF.	[5+5]

8.a) Discuss the application of 555 timer as missing pulse detector.
  b) Design a monostable multivibrator to produce a pulse width of 100ms. [5+5]

OR

9.a) Discuss the application of 555 timer as a pulse width modulator.
  b) Draw the functional diagram of 555 timer and explain briefly. [5+5]

10.a) Discuss the operation of counter type ADC.
   b) Explain the operation of dual slope ADC. [5+5]

OR

11.a) Explain the operation of flash type ADC.
   b) Explain the operation of weighted resistor DAC. [5+5]

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