

Code No: 55009

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B. Tech III Year I Semester Examinations, December - 2014

IC APPLICATIONS

(Common to EEE, ECE, ETM)

Time: 3 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) What are the AC and DC characteristics of op-amp?
- b) Derive the gain of non-inverting op-amp and draw the corresponding input and output waveforms.
- c) Define the input and output offset voltages and currents.

- 2.a) Draw sample and hold circuit diagram and explain its working and also write its applications.
- b) Write features of IC 723 and where it is used?

- 3.a) Design a first order Active High Pass filter with cutoff frequency of 2kHz with op-amp. Why this is called Active filter?
- b) How to generate a square wave using op-amp?

- 4.a) Draw the functional block diagram of 555 timer and explain the function of each block.
- b) What are the applications of IC565 and explain any one of them in detail.

- 5.a) Compare R-2R ladder and inverted R-2R ladder type DACs.
- b) Draw the circuit diagram of Successive approximation ADC and explain its working and also compare its performance in terms of speed of operation with other type of ADCs.

- 6.a) How to interface the CMOS gate with TTL gate?
- b) What is mean by tristate outputs in logic gates and how these are advantage in logic gates?
- c) What are the merits of TTL gate if collector is open circuit?

- 7.a) Design a priority encoder and explain its working.
- b) Design a two bit subtractor based on 2's complement method.

- 8.a) Convert the D Flip-Flop to J-K Flip-Flop.
- b) How Asynchronous counters are different from Synchronous counters?
- c) Draw the circuit diagram of Serial in and Parallel out shift Register.