

Code No: 55009

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November - 2015

IC APPLICATIONS
(Common to EEE, ECE, ETM)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) Derive the expressions to show that op-amp can be used as (i) adder (ii) subtractor.
- b) Explain in detail about classification of ICs. [8+7]
- 2.a) With a neat circuit diagram and necessary waveforms explain op-amp as Schmitt Trigger.
- b) Explain internal block diagram of 723 IC voltage regulators. [7+8]
- 3.a) Compare active and passive filters.
- b) Draw the circuit diagram of first order LPF and HPF and derive the expressions for cut-off frequency. [7+8]
- 4.a) Draw the 555 timer circuit in astable mode to get output waveform with 50% duty cycle.
- b) Explain the Pin configuration 555 IC. [8+7]
- 5.a) Compare weighed resistor type and R-2R ladder type DACs.
- b) Discuss in detail about specifications of ADCs and DACs. [8+7]
- 6.a) With a neat circuit diagram explain the operation of a TTL open collector NAND gate.
- b) With a neat circuit diagram explain the operation of a CMOS open drain and tristate NOR gate. [7+8]
- 7.a) Describe the operations performed by the following logic circuits with an example (i) Comparator (ii) Encoder
- b) Explain the operation of a 3-to-8 decoder 74LS138. Realize 4-to-16 decoder using two 3-to-8 decoders. [8+7]
- 8.a) What is a shift register? Explain about the following modes of operations in a four bit shift register (i) shift right (ii) shift left (iii) bidirectional.
- b) Explain the differences between ring and Johnson counters. Design and explain the operation of a decade Johnson counter. [7+8]