

Integrated Circuits-

(3 Hours)

[Total Marks : 80]



- NB.:** (1) Question no.1 is compulsory.  
(2) Solve any three questions from the remaining five.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data if required and mention the same in the answer sheet.

1. Solve any five. 20
- (a) Draw the diagram for grounded load voltage to current converter and derive the expression for the output current.
  - (b) Explain simple current limit protection circuit in voltage regulators.
  - (c) Compare ideal and practical opAmp.
  - (d) How LM317 is used as adjustable voltage regulator.
  - (e) Explain working of peak detector.
  - (f) Draw mod-10 counter using IC7493.
2. (a) Draw the diagram of a monostable multivibrator using timer IC555. With the help of waveforms at the trigger input, across the charging capacitor and at the output explain its working. Design the same for pulse width of 11ms. 10
- (b) Draw the functional block diagram of IC723 Voltage regulator and Explain its working as a basic low voltage regulator. Design the same for an output of 5V and load current upto 200mA. 10
3. (a) Explain working of RC phase shift Oscillator with the help of neat circuit diagram and derive expression for frequency of oscillation. 10
- (b) With the help of a neat diagram, input and output waveforms and voltage transfer characteristics explain the working of non inverting schmitt trigger. Derive the expressions for the upper and lower threshold levels. Explain how these levels can be varied. 10
4. (a) With the help of neat circuit diagrams explain the working of universal shift register IC74194 as a ring counter and twisted ring counter. 10
- (b) With the help of neat diagram explain working of IC74163 synchronous 4-bit binary counter. Also illustrate cascading connections for IC74163 based counter. 10

5. (a) What is precision rectifier? Explain working of full wave precision rectifier with the help of neat diagram and waveforms. 10
- (b) Draw circuit diagram of antilog converter and derive expression for its output voltage. 10
6. Write Short notes on any four. 20
- (a) Window detector
- (b) Programmable gain amplifier.
- (c) IC 534 multiplier
- (d) IC74181 Arithmetic Logic Unit.
- (e) Monolithic Switching Regulator.

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