

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question no.1 is compulsory solve any three from remaining questions.
  2. Assume suitable data if necessary.
  3. Diagrams to be drawn neatly.

- Q.1** A) Define following OPAMP parameters. **05**  
 1) C.M.R.R 2) Slew rate 3) Input offset voltage 4) Input bias current  
 5) output resistance
- B) What are comparators? How are they classified, state applications of comparators. **05**
- C) What are active filters? How are they classified? State its applications. **05**
- D) Draw the block diagram and explain the operation of switching regulator. **05**
- Q.2** A) Design second order high pass filter using OPAMP at  $f_0 = 1\text{KHZ}$  and with gain at 2. **10**
- B) Draw block diagram and explain function of each block of operational amplifier. **10**
- Q.3** A) Draw circuit diagram of temperature compensated log amplifier and explain its operation. State its applications. **10**
- B) Draw circuit diagram and explain the operation of parallel comparator (flash type) ADC. State its advantages and disadvantages. **10**
- Q.4** A) Design a monostable multivibrator to produce an output pulse 10 second wide. Draw neat circuit diagram and all the waveforms. **10**
- B) Draw the circuit diagram and explain the operation of triangular wave generator using OPAMP. Explain the modifications required to obtain saw tooth wave output. **10**
- Q.5** A) Draw block diagram and explain the operation of PLL (phase locked loop). State its applications. **10**
- B) Explain with circuit diagram **10**  
 1) short circuit protection  
 2) fold back current limiting in 723 IC voltage regulator.
- Q.6** Write notes on following (Any two) **20**  
 1) RC phase shift oscillator using OPAMP.  
 2) Schmitt trigger and its applications.  
 3) Instrumentation amplifier.

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