T.E. sem 6 (Rev.) Analog Integrated circuits and Applications 30/12/08

VT Oct 08-326 A

Etrx

Con. 5918–08. (REVISED COURSE) RC–6896

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) Assume **suitable** data if **required** and state it **clearly**.

1. (a) Draw the circuit diagram of three op-amp instrumentation amplifier. Get an expression for the output. **10**
   (b) Why is an op-amp diode rectifier called as a precision rectifier ? Explain with waveforms. **10**

2. (a) Design a voltage regulator using IC 723 to regulate the output voltage between 4V to 20V and output current of 100 mA. **10**
   (b) Draw the circuit diagram and explain multiplication and division of two analog signals using op amps. **10**

3. (a) Explain how a missing pulse can be detected using IC 555. **10**
   (b) Design an op-amp based Schmitt trigger with UTP = +4V, LTP = –2V. Assume op-amp is powered with ± 12V and $V_{ref.}$ = –3V. **10**

4. (a) Design a phase shift oscillator with f_o = 5 KHz. How is the peak to peak output voltage adjusted ? **10**
   (b) Draw the functional block diagram of PLL IC 565 and explain its working. **10**

5. (a) What are the different types of Digital to Analog converters ? Explain one of the techniques in detail. **10**
   (b) Design a Low-pass, second order KRC filter using equal component design using f_o = 1 KHz and Q = 5. What is its dc gain ? **10**

6. (a) Explain the frequency response of an ideal integrator and that of practical integrator with figures. **10**
   (b) What are the main features of IC 8038 ? **10**

7. Write notes on (any two) :– **20**
   (a) Switched Capacitor Filters
   (b) Three Pin Regulators
   (c) Dual Slope ADC
   (d) Antilog Amplifier.