Sub : Linear Integrated circuits & Design
TE (ETRX) V (Rev)
21/5/2014

QP Code : MV-18440

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Answer any **four** out of the remaining **six** questions.
(3) Assume **suitable** data wherever **necessary**.
(4) Figures to **right** indicate **full** marks.

1. Solve any **four** :— **20**
   (a) Explain CMRR measurement procedure with examples.
   (b) How is current boosting achieved in a 723 IC ?
   (c) What are the different linear IC packages ?
   (d) What is rolloff rate of first order filter ?
   (e) Draw sample and hold Amplifier and list its applications.
   (f) Explain first order Active filter circuit.

2. (a) Draw simplified Op-Amp circuit diagram and explain the following stages alongwith the working of this circuit :— **10**
   (i) Input Stage
   (ii) Second Stage
   (iii) Output Stage.
   (b) Draw the circuit diagram of three Op-Amp instrumentation amplifier. Get an expression for the output. State its characteristics. **10**

3. (a) Design a fourth order Butterworth Low pass filter having upper cut-off frequency of 1khz. **10**
   (b) What is a Switched Capacitor ? Give the circuit of a Switched Capacitor Low pass filter and discuss various types of Switched Capacitor ? **10**

4. (a) What are the different types of Digital to analog Converters ? Explain one of the techniques in detail. **10**
   (b) What is Comparator ? Draw the characteristics of an ideal Comparator and that of a commercially available Comparator. What is the difference between a basic Comparator and the schmitt trigger ? **10**

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5. (a) Draw and explain the functional diagram of Timer IC 555 and explain its operation in astable mode. **10**

(b) Draw and explain the circuit diagram to generate square and triangular waveforms using Op-Amp. Derive the expression for frequency and Comment about the range of frequency. **10**

6. (a) What is the function of voltage regulator ? Explain in detail about fixed voltage series regulator. **10**

(b) Design a voltage regulator using IC 723 for V_o = 5V, I_o = 50 mA, I_{SC} = 75 mA, Vin = 15 V. Assume Vsense = 0·6 V. **10**

7. Write short notes on any **four** of the following :— **20**

(a) RC phase shift oscillator

(b) KRC filter

(c) Peak detector

(d) Phase Locked Loop

(e) Voltage to frequency converters.
