S.E. (EXTC) sem 4 (Rev.) wave shaping Techniques 04/12/07

Con. 5253–07. (REVISED COURSE) CD–5892

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from Q. Nos. **2** to **7**.
(3) Assume **suitable** data wherever **necessary**.
(4) Draw **neat** sketches/circuits to support your answers.
(5) **Figures** to the **right** indicate **full** marks.

1. Attempt any **four** :– **20**
   (a) Decribe the functional diagram of IC 555.
   (b) Differentiate between linear voltage regulator and switch mode voltage regulator.
   (c) Write on "Electronic Analog Computer".
   (d) State the classification of ADC. On what basis they are classified as such ? List-out the ADCS in each of the classes/groups.
   (e) Draw the functional diagrams for Low voltage and High voltage regulator using IC 723.

2. (a) Draw and explain sweep generator circuit using UJT. Also draw the modified UJT circuit in astable mode with waveform. **10**
   (b) Draw and explain the transistorised Miller time base generator circuit. **10**

3. (a) Explain, with circuit diagram, the operation of FSK generator using IC 555. State the equation for output frequency. **10**
   (b) Design an astable multivibrator using IC 555 which will generate a square wave of 1 KHz for the duty cycle (i) D = 0·25 (ii) D = 0·50. **10**

4. (a) Setup an analog computer simulation to generate a sinusoidal signal 10 sin 3t. **10**
   (b) Explain, with circuit diagram, how three terminal fixed voltage regulator (eq. IC 7805) can be used as adjustable regulator ? Specify suitable component values to get output of 7·5 V using IC 7805 circuit. (I_Q = 4·2 mA, I_R, or I_1 = 25 mA) **10**

5. (a) Draw and explain astable multivibrator using OP–AMP with waveforms. **10**
   (b) Explain the operation of direct comparator (Flash) A/D converter. **10**

6. (a) Explain R – 2R Ladder DAC, hence derive the equation for output voltage. **10**
   (b) Draw and explain the functional block diagram of IC 8038. Give the equation for frequency of oscillation at the output. **10**

7. Write short notes on (any **four**) :– **20**
   (a) Dual slope ADC
   (b) IC 566 VCO
   (c) IC XR – 2206
   (d) Analog MUX and DEMUX
   (e) Sample and Hold circuit
   (f) IC – 555 as missing Pulse detector.
