PG/IS/EL-1112/09(Pr.)

M.Sc. 1st Semester Examination, 2009

ELECTRONICS

(*Electronic Circuit Laboratory*)

PAPER—EL-1112

(Practical)

Full Marks : 50

Time : 3 hours

Answer any **one** question

The figures in the right-hand margin indicate marks

1. (*i*) Design a regulated power supply of 6V d.c. using a power transistor as a pass element and a transistor as a comparator.

(*ii*) Implement this circuit on a bread board.

(*iii*) Vary the input voltage from 0 – 10V and draw its line regulation characteristics curve. 15 + 10 + 15

2. (*i*) Design a regulated power supply of variable output using IC LM 317.

(*ii*) Implement this circuit on a bread board.

(*iii*) Vary the input voltage from 0 – 10V and draw its line regulation characteristics curve for two fixed voltages (5V, 7V). 15 + 10 + 15

3. (*i*) Draw the circuit diagram of a logarithmic amplifier using an OP-AMP.

(*ii*) Implement this circuit on a bread board.

(*iii*) Vary the input voltage from 0 to 3 Volt step 0·1V and draw its transfer characteristics curve.

(*iv*) Write down necessary discussions.

10 + 10 + (10 + 5) + 5

4. (*i*) Design a Active 2nd order low-pass Butterworth filter having cut-off frequency of 6 kHz.

(*ii*) Implement this circuit on a bread board.

(*iii*) Apply a sinusoidal signal to the input of the circuit. Vary its frequency upto 20 kHz and draw its frequency response characteristics.

(*iv*) Find out the cut-off frequency and roll of rate from the frequency response characteristics curve. 10 + 10 + 10 + (5 + 5)

5. (*i*) Design and implement a regulated power supply of 5V dc using suitable IC of 78 series.

(*ii*) Draw its Load regulation characteristics curve.

(*iii*) Draw its Line regulation characteristics curve. 10 + 15 + 15

6. Design and construct an active second order high-pass Butterworth filter and study its frequency response curve. Compare the cut-off frequency from graph with the designed one with component values. Also determine the role off rate of the curve. Cut-off frequency ..... kHz. (Supplied).

[Frequency measured by C.R.O is preferred]

[Theory – 5, Design – 7, Circuit – 2, Data – 14, Graph – 4, Cut-off frequency comparison – 2, Role off rate – 3, Discussion – 3]

7. (*i*) Design a Regulated Power Supply using IC 78XX (Series) to construct a power supply of V_1 volt. Find line and load regulation.

[V_1 should be supplied]

(*ii*) Design a variable output Regulated Power Supply using IC LM 317. Observe its Line and Load regulation for 2 different output voltages one of them should be V_1 volt.

(*iii*) Compare the curves for O/P voltage V_1 for IC 78XX and LM 317.

[Theory – 6 + 6 , Circuit – 3 + 3, Data record – (3 + 3) + (3 + 3), Graph – 3 + 5, Discussion – 2]

{ Viva-voce : 05 Marks
Practical Note Book : 05 Marks }