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Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Linear IC's & Applications

Time: 3 hrs.

Max. Marks:100

- Note:** 1. Answer any FIVE full questions, selecting at least TWO questions from each part.
 2. Use of Resistor and capacitor standard values list permitted.

PART – A

- 1 a. With a neat circuit explain capacitor coupled voltage follower. (06 Marks)
 b. Design a capacitor coupled voltage follower using 741 op-amp. The lower cut-off frequency for the circuit is to be 50 Hz and load resistance is 3.9 k Ω . (06 Marks)
 c. Sketch the circuit of capacitor coupled non-inverting amplifier using single polarity supply and explain briefly. (08 Marks)
- 2 a. With the help of necessary circuit and response curve. Explain (i) Phase lag compensation (ii) Phase lead compensation (10 Marks)
 b. Define skew rate. Explain the effects of skew rate on Bandwidth and output amplitude and output pulse rise time. (10 Marks)
- 3 a. Sketch the circuit of 2 output precision rectifier and explain its operation with necessary waveforms. (08 Marks)
 b. Sketch the circuit of diode clamping circuit and explain its operation with waveforms. (06 Marks)
 c. A $\pm 5V$, 10 kHz square wave from a signal source with a resistance of 100 Ω is to have its positive peak clamped previously at ground level. Tilt on the output is not to exceed 1% of peak amplitude of the wave. Design a suitable op-amp circuit. (06 Marks)
- 4 a. With circuit diagram, explain the working of a capacitor coupled crossing detectors and give design steps. (08 Marks)
 b. Sketch the circuit of inverting Schmitt trigger circuit and explain its operation with waveforms. (08 Marks)
 c. Bring out the differences between linear and non-linear circuits. (04 Marks)

PART – B

- 5 a. With a neat circuit diagram and waveforms explain the operation of triangular / rectangular wave generator. (08 Marks)
 b. Sketch the circuit of RC phase shift oscillator using op-amp and explain with waveforms. (06 Marks)
 c. Using BIFET op-amp with a supply of $\pm 12V$, design a Wein bridge oscillator to have an output frequency of 15 kHz. (06 Marks)
- 6 a. Sketch the circuit of 1st order low pass filter and explain its operation with Response curve. (06 Marks)
 b. Design a 2nd order low pass filter to have a cut off frequency of 1 kHz. (06 Marks)
 c. Sketch the circuit of single stage 1st order Bandpass filter and explain its operation. (08 Marks)
- 7 a. With a block diagram, explain the operation of phase locked loop. List out any four applications of phase locked loop. (10 Marks)
 b. Explain with the help of block diagram, Universal Active Filter. (10 Marks)
- 8 a. Sketch the circuit of voltage follower regulator and explain its operation. Write the design steps for designing voltage follower regulator. (10 Marks)
 b. Sketch the circuit of adjustable output regulator and explain its operation. (10 Marks)

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