Fifth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Linear IC's & Applications

Time: 3 hrs.   Max. Marks:100

Note: 1. *Answer FIVE full questions, selecting*
at least TWO questions from each part.
    2. *Data sheets of typical standard Resistor, Capacitor values*
permitted.

PART – A

1   a.   Sketch the circuit of high zin capacitor coupled voltage follower and derive an expression for input impedance. **(08 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 with R_L = 3.9 kΩ **(06 Marks)**
    c.   Sketch the circuit of capacitor coupled non-inverting amplifier using single polarity supply and explain briefly. **(06 Marks)**

2   a.   What is frequency compensation? With the help of circuit and its response, explain phase lag and phase lead compensation. **(12 Marks)**
    b.   List the circuit stability precautions. **(08 Marks)**

3   a.   Sketch the circuit of precision full wave rectifier with half wave rectifier and summing circuit with waveform and explain its operation with waveforms. **(08 Marks)**
    b.   Design a precision full wave rectifier circuit to produce 2 V peak output from a sine wave input with a peak value of 0.5 V and with a frequency of 1 MHz. Use bipolar op-amp with a supply of ±15 V. **(06 Marks)**
    c.   With the help of neat sketch and waveform, explain diode clamping circuit. **(06 Marks)**

4   a.   Sketch the circuit of capacitor coupled crossing detectors, draw its waveforms and explain its operation. **(08 Marks)**
    b.   Sketch the circuit of inverting Schmitt Trigger circuit and explain its operation with necessary waveforms. **(06 Marks)**
    c.   Using BIFET op-amp, design astable multivibrator to have ±9 V output with a frequency of 1 kHz. **(06 Marks)**

PART – B

5   a.   Sketch the circuit of triangular / rectangular wave generator. Explain its operation with necessary waveform. **(10 Marks)**
    b.   Sketch the circuit of Weinbridge oscillator and explain its operation with necessary waveforms. **(05 Marks)**
    c.   Using BIFET op-amp with a supply of ±12V, design a wein bridge oscillator to have output frequency of 15 kHz. **(05 Marks)**

6   a.   Sketch the circuit of I^{st} order low pass filter and explain its operation with necessary waveform. **(08 Marks)**
    b.   Using a 741, design a I^{st} order active low pass filter to have cut-off frequency of 1 kHz. **(06 Marks)**
    c.   Design a IInd order LPF circuit to have cut-off frequency of 1 kHz. **(06 Marks)**

7   a.   With the help of block diagram, explain phase locked loops. **(08 Marks)**
    b.   Briefly explain the operation of switched capacitor filter. **(08 Marks)**
    c.   Write a note on power amplifier. **(04 Marks)**

8   a.   With the help of circuit, explain the operation of the adjustable output regulator. **(10 Marks)**
    b.   With the help of circuit diagram, explain the previous voltage regulator. **(10 Marks)**

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