Third Year B. Sc. (Sem. VI) Examination
March/April – 2016
Electronics : Paper - VI
(Linear Integrated Systems)

Time : Hours] [Total Marks : 50

Instructions :
(1) Fill up strictly the details of signs on your answer book.
Name of the Examination : THIRD YEAR B. SC. (SEM. VI)
Name of the Subject : Electronics : Paper - VI
Subject Code No. : 3 2 8 2 Section No. (1, 2,.....) : Nil
Seat No. :

(2) Figures on the right indicate full marks.
(3) All symbols and abbreviations have their usual meaning.
(4) Non-programmable calculators are allowed.
(5) Q.1 is compulsory.
(6) Assume data if necessary.

1 Answer in brief : 14

1. Explain Chebyshev response.

2. What causes the gain of the op-amp to roll off after a certain frequency is reached ?

3. Draw the high frequency model of an op-amp with single break frequency.

4. Explain slew rate and its causes.

5. What are the features of timer IC ?


7. Design a Wein bridge oscillator using IC741 of 5 kHz.
2 (A) What is the name of the circuit that is used to detect the peak value of the non-sinusoidal input waveforms? Briefly explain its operation.
(B) What is voltage limiting? Why is it needed?

OR

2 (A) Discuss in detail first order Butterworth low pass filter and its design principles.
(B) Design second order Butterworth high pass filter using op-amp for a cut-off frequency of 2 kHz.

3 (A) Explain the working of successive-approximation A/D Converter with an example.
(B) What is Schmitt trigger?

OR

3 (A) Explain how the IC 555 is functioning as an astable multivibrator.
(B) Design an astable multivibrator using IC555 having an output frequency of 1 kHz with a duty cycle of 70%.

4 (A) Derive the expression for phase shift between \( v_o \) and \( v_{in} \) in an all-pass filter.
(B) For all-pass filter determine the phase shift between input and output at \( f = 5 \) kHz. To obtain positive phase shift, what modifications are to be done?
\[ R = 10k\Omega \text{ and } C = 0.1\mu F. \]

OR

4 (A) Explain a square wave generator using 741. How will you modify it to make a triangular wave generator?
(B) Determine the stability of a voltage follower using 741 op-amp.