



DRR-3282

Third Year B. Sc. (Sem. VI) Examination

March/April – 2016

Electronics : Paper - VI

(Linear Integrated Systems)

Time : Hours]

[Total Marks : 50

Instructions :

(1)

नीचे दृशावेव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी.
Fillup 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. :
[] [] [] [] [] []

Student's Signature

- (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 ?
- 6 State Barkhausen criteria for oscillation.
- 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. 8

(B) What is voltage limiting ? Why is it needed ? 4

OR

2 (A) Discuss in detail first order Butterworth low pass filter and its design principles. 8

(B) Design second order Butterworth high pass filter using op-amp for a cut-off frequency of 2 kHz. 4

3 (A) Explain the working of successive-approximation A/D Converter with an example. 8

(B) What is Schmitt trigger ? 4

OR

3 (A) Explain how the IC 555 is functioning as an astable multivibrator. 6

(B) Design an astable multivibrator using IC555 having an output frequency of 1 kHz with a duty cycle of 70%. 6

4 (A) Derive the expression for phase shift between v_o and v_{in} in an all-pass filter. 8

(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 ? 4

$$R = 10k\Omega \text{ and } C = 0.1\mu F.$$

OR

4 (A) Explain a square wave generator using 741. How will you modify it to make a triangular wave generator ? 7

(B) Determine the stability of a voltage follower using 741 C op-amp. 5