

Seat No. : _____

AB-118

April-2016

B.Sc., Sem.-VI

CC-307 : Electronics

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) **All** questions carry equal marks.
(2) Figures on the right indicate marks.
(3) Clearly mention the options.

1. (a) Draw the circuit of log amplifier using two Op-Amps and explain its operation. Also obtain the expression for V_o . 7

OR

Discuss the differentiator circuit using Op-Amp.

- (b) Discuss the circuit of non-inverting comparator and explain its operation. Also draw its input, output waveforms for V_{ref} Positive and V_{ref} negative. 7

OR

Draw the circuit of regenerative comparator (Schmitt trigger) and explain its operation.

2. (a) Draw the block diagram of PLL and explain each block in brief. 7

OR

Draw the circuit of digital phase detector and explain its operation.

- (b) Discuss how PLL is used as a frequency multiplication and AM detection. 7

OR

Obtain the expression for lock in range related to PLL.

3. (a) Explain the construction and working of an SCR. 7

OR

Discuss full wave rectifier using SCR and derive the expression for average voltage and average current.

- (b) Discuss the application of SCR as a power control. 7

OR

Draw V-I characteristics of an SCR and explain it.

4. (a) Describe SCR equivalent circuit of Triac. 7

OR

Draw V-I characteristics of Triac and explain its operation.

- (b) Discuss how Diac is used as a lamp dimmer. 7

OR

How UJT is used as a relaxation oscillator ? Also obtain the expression for frequency of saw-tooth wave.

5. Answer in **one** or **two** sentences : 14

- (1) What are the limitations of ordinary Op-Amp differentiator ?
 - (2) Draw the circuit of lossy integrator.
 - (3) Give difference between digital and analog PLL.
 - (4) Define capture range.
 - (5) Draw the circuit of AM phase detector.
 - (6) Define voltage to frequency conversion factor K_V .
 - (7) Define holding current.
 - (8) Why are SCRs usually used in a.c. circuit ?
 - (9) In an SCR circuit how the angle of conduction can be changed ?
 - (10) State advantages of SCR as a switch.
 - (11) Define peak inverse voltage of SCR.
 - (12) Which thyristor that does not have the gate terminal ?
 - (13) Write full form of VCO.
 - (14) List the applications of Triac.
-