

Roll Number: \_\_\_\_\_

**Thapar University, Patiala**

Department of Electrical and Instrumentation Engineering

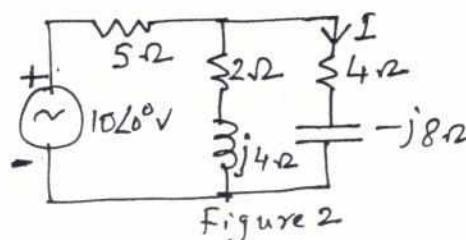
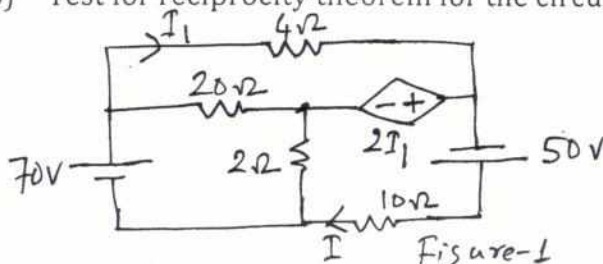
**END SEMESTER EXAMINATION**

B. E. (Third Year): Semester-I (2017-2018)	Course Code: UEE503
	Course Name: Network Analysis and Synthesis
December 13, 2017	Wednesday, 14.00 – 17.00 Hrs
Time: 3 Hours, M. Marks: 100	Name of Faculty: S. Ghosh

**Note: Attempt all questions.**

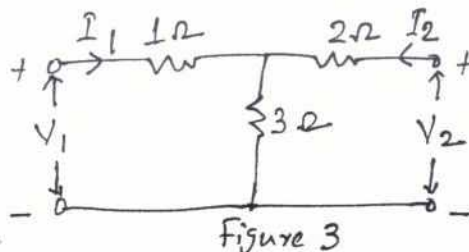
**Q1.(a)** Apply superposition theorem and determine the current  $I$  in the circuit shown in Figure 1. [14]

(b) Test for reciprocity theorem for the circuit shown in Figure 2. [06]



**Q2.(a)** Determine Z, Y, ABCD and h parameters of the circuit shown in Figure 3. [16]

(b) Develop cascade connection and determine the equivalent parameter of this connection. [04]



**Q3.(a)** Formulate input and output impedances of a two port network in terms of Z, ABCD and h parameters. [12]

(b) Find the condition of symmetry and reciprocity of a two port network for Z and h parameters. [08]

**Q4.** The impedance function of a two port network is  $Z(s) = \frac{K(s^2 + 1)(s^2 + 9)}{s(s^2 + 4)}$ . [20]

Determine the type of the function. If  $Z(s) = -\frac{130}{16}$ , synthesize the impedance in (a) Foster-I and Foster-II forms ; and (b) Cauer-I and Cauer-II forms.

**Q5.** The impedance of a network is  $Z(s) = \frac{s(s+2)(s+5)}{(s+1)(s+4)}$ . Determine the type of the function. Also synthesize the impedance in (a) Foster-I and Foster-II forms; and (b) Cauer-I and Cauer-II forms. [20]

**NOTE: SEE YOUR EVALUATED ANSWER SCRIPT ON 15-12-2017 AT 5:15 PM IN D-206.**