



Roll No.....

National Institute of Technology Delhi

Make Up Examinations

Name of Specialization: EEE/ ECE

Course Name: Network Analysis & Synthesis

Course Code: EEL-201

Year: 2nd/ Semester: III

Maximum Marks – 50

Total Time: 3:00 Hours

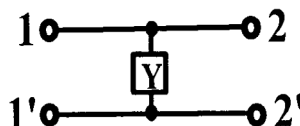
Note:

- All Questions are compulsory.
- Assume data where ever required.

Section A (01 mark each and all parts are compulsory)

Q1) What are the open circuit impedance parameters of a two-port network? (1)

Q2) Find the z and y parameter for the network shown. (1)



Q3) Write the relation between the line and phase value of voltage and current in a balanced delta connection. (1)

Q4) Write the expression for power factor in two-wattmeter method of power measurement. (1)

Q5) Name any two methods used to analyze unbalanced star-connected loads having isolated neutral point (1)

Q6) State substitution theorem (1)

Q7) What is the condition for maximum power transfer in DC circuits (1)

Q8) What is phase sequence. (1)

Q9) A stable system must have (1)

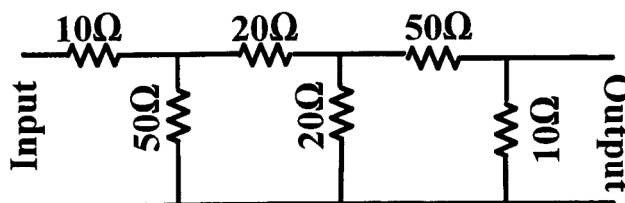
(a) zero or negative real part for poles and zeros (b) at least one pole or zero lying in the right half of s-plane

(c) positive real part for any pole or zero (d) negative real part for all poles and zeros

Q10) What is a two-port network. (1)

Section B (Any four (04) are to be attempted)

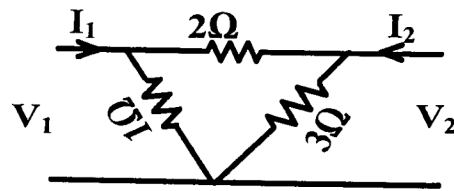
Q11) Obtain the ABCD parameters for the network shown



(5)

Q12) Find the hybrid parameters of the circuit shown

(5)



Q13) A 3-phase 500V industrial motor has a power factor of 0.5. Two wattmeters, which are used to measure input, show the input to be 50 kW. What are the readings of each wattmeter?

(5)

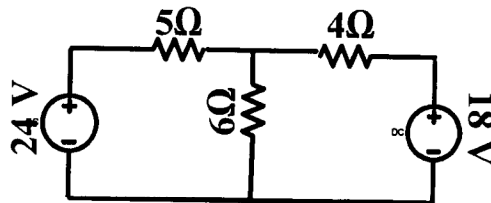
Q14) A linear system is described by the differential equation

$$\frac{d^2 y}{dt^2} + 5 \frac{dy}{dt} + 6y = 2 \frac{du}{dt} + 1, \text{ Find the system poles and zeros.}$$

(5)

Q15) Calculate the current flowing through 6Ω resistor in the circuit shown, using Millman's theorem.

(5)



Section C (Any two (02) are to be attempted)

Q16) Test whether the following polynomial is Hurwitz or not with proper reason.

(a) $s^4 + 8s^2 + 32$

(5)

(b) $s^5 + 5s^3 + 4s$

(5)

Q17) Determine whether the function is a positive real functions (PRF) and hence realizable.

(10)

$$F(s) = \frac{s^2 + 6s + 5}{s^2 + 9s + 14}$$

Q18) Write the properties of RL impedance/ RC admittance function & explain foster form-I and foster form-II for RL network.

(10)