2063

B.E. (Electronics and Communication Engineering)

Second Semester

EC-204: Electrical Science

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt _five_ questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

(a) Differentiate between dependent and independent sources.

(b) Explain the use of Reciprocity's theorem.

(c) What are hybrid parameters w.r.t two port networks.

(d) Classify filters by representing their stop bands.
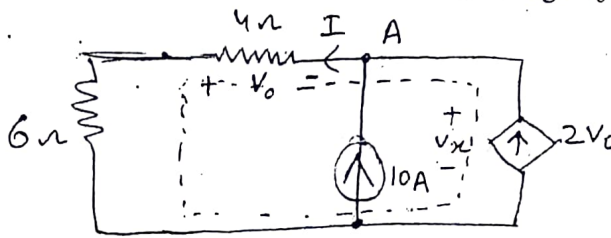
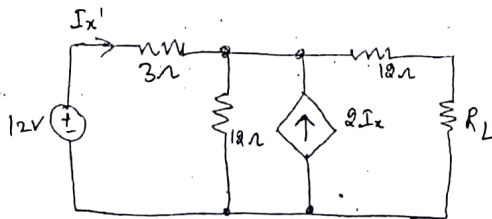(e) Draw and explain torque/ slip characteristics. (5x2)

UNIT - I

II. a) What is Duality and explain the method to determine the dual of a network?

b) For the circuit shown in the figure, find the value of voltage V_o. (2x5)

III. a) For the circuit shown in the figure, the value of load R_L, for maximum power transfer to it is?

b) In which type of network superposition theorem can be applied? (2x5)

IV. a) Find the pole zero plot of the network function given as
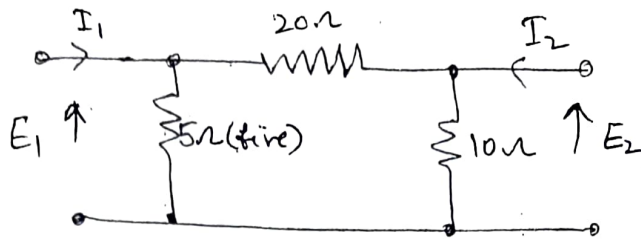
$$P(S) = \frac{2s}{(s+2)(s^2+2s+2)}$$

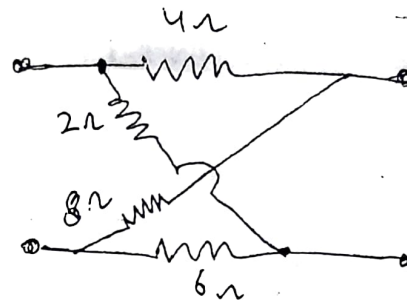b) What are the restrictions of poles and zeros in driving point functions? (2x5)

P.T.O

x-x-x

UNIT - II

V. a) Find the admittance parameter y_{12} in the two port network shown in figure:-

b) Calculate the z matrix of the two port network shown in the following figure

(2x5)

VI. Design a constant k band stop filter from 2000Hz to 5000 Hz, R0, k = 600 ohms in T and Pi configuration . Also represent it graphically.

(10)

VII. a) Explain the working principle of DC motors.

b) A six pole, 2 circuit wave connected armature has 300 conductors and runs at 1000 rpm. The emf generated on the open circuit is 400V. Find the useful flux per pole.

(2x5)

x-x-x