C14–EC–403

4457

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2017
DECE—FOURTH SEMESTER EXAMINATION

NETWORK ANALYSIS

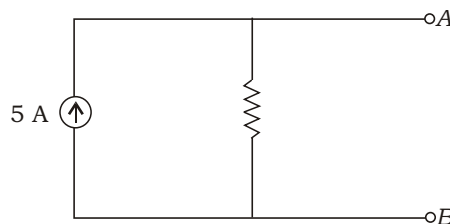*Time* : 3 hours]   [*Total Marks* : 80

PART—A   3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Explain dot rule for coupled circuits.

2. Determine the equivalent voltage source for the current souce shown in the figure below :

3. Give the mathematical equations for star to delta circuit transformation.

4. Define Thevenin's theorem.

5. Define branch, junction and loop.

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6. Draw the dual of the given network :
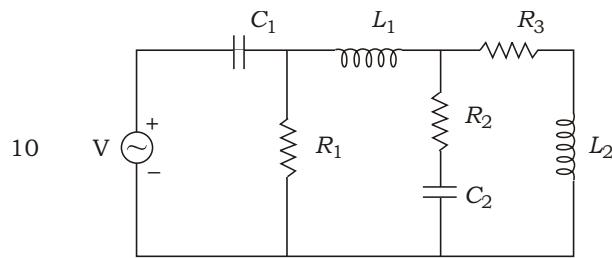
7. Define the terms transient and steady state.

8. Give the conditions for reciprocity in terms of z, y and h parameters.

9. Draw the characteristic curves for low-pass filter and high-pass filter.

**10.** List the applications of equalizer circuit.

PART—B 10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

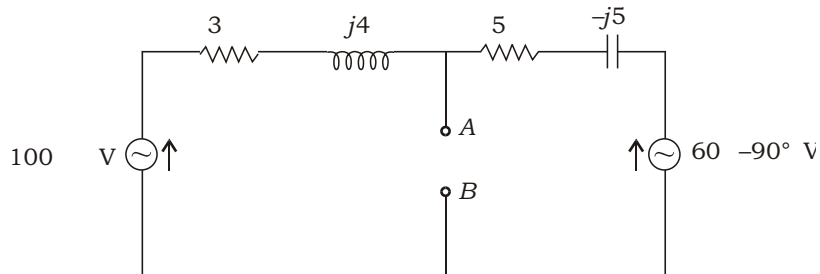**11.** *(a)* State Kirchhoff's current law and Kirchhoff's voltage law.

(b) Find the current through and voltage across each resistor in the given circuit :
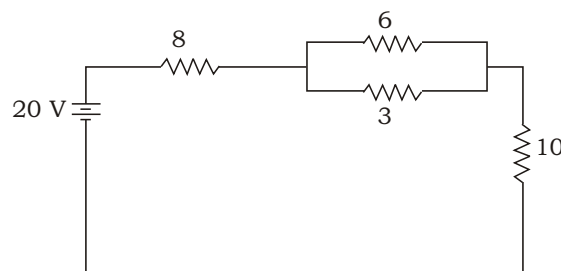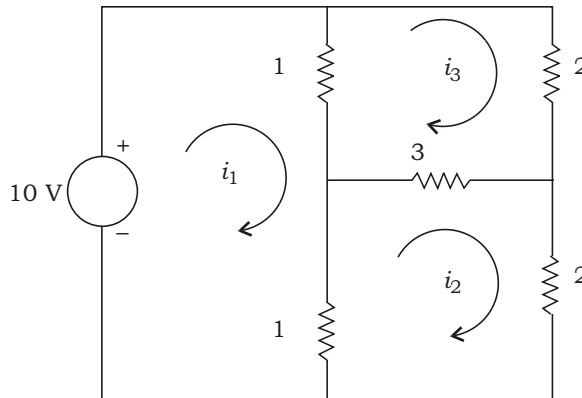
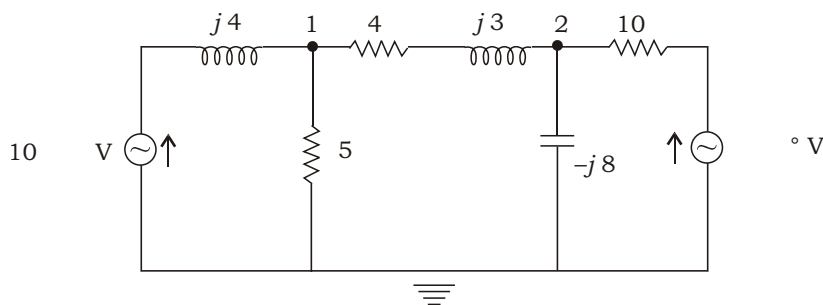**12.** For the circuit shown below, find the current across 2 ohms resistor using superposition theorem :
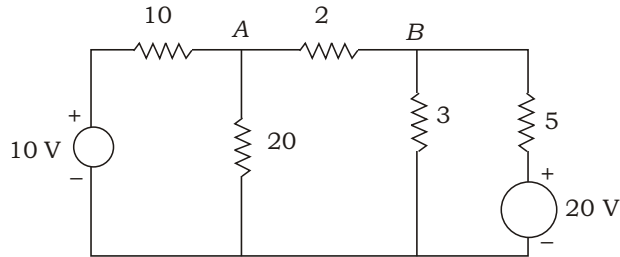
13. Find the Norton's equivalent circuit at terminals AB of the network shown in the figure below :

14. For the circuit shown below, find the currents i_1, i_2 using mesh current analysis :
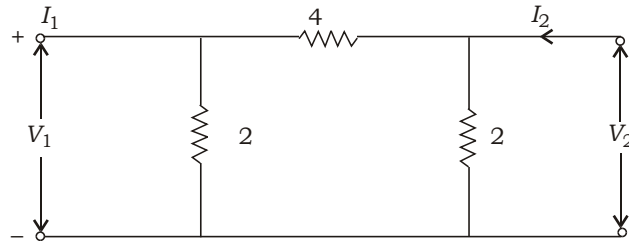

15. In the given network, find the voltage at node 2 using node voltage analysis :
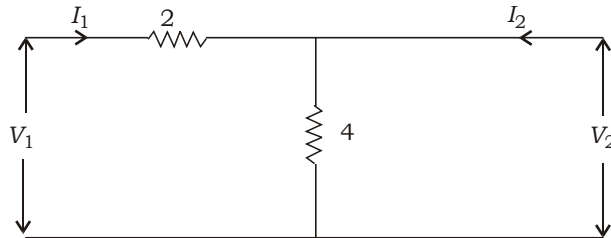
16. Explain the transient analysis of series RC circuit for DC excitation.

17. *(a)* Find the z parameters of the given network :

(b) Find h parameters of the given network :

18. Design a low-pass T-section filter having a cut-off frequency of 2 kHz to operate with a terminated load resistance of 600 .

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