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C16–EC–303

5459

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

DECE—THIRD 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.

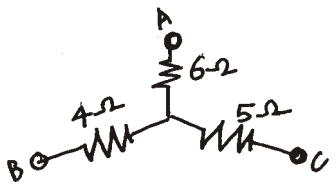
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State any three limitations of Ohm's law.

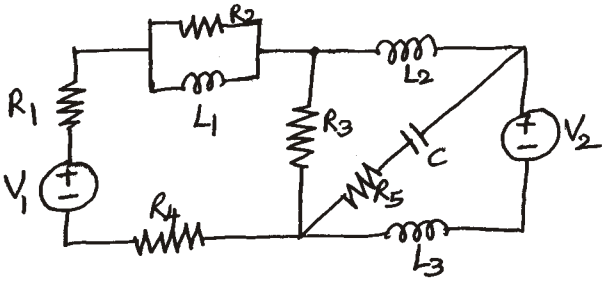
2. List the three applications of tuned circuits.

3. State Thevenin's theorem.

4. Convert the given star network into its equivalent delta network :



5. Find the number of mesh equations required to solve the given network :



6. Define *(a)* tree, *(b)* co-tree and *(c)* twigs.

7. Define the steady state response and transient response.

8. Give the symmetric conditions and reciprocity conditions in terms of *Z*- and *h*-parameters.

9. Define characteristic impedance.

10. List the applications of equalizer.

PART—B

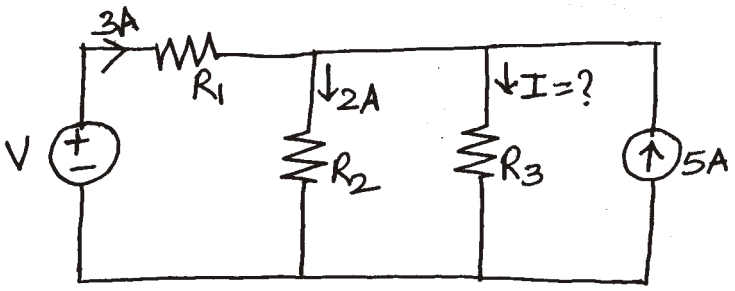
10×5=50

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

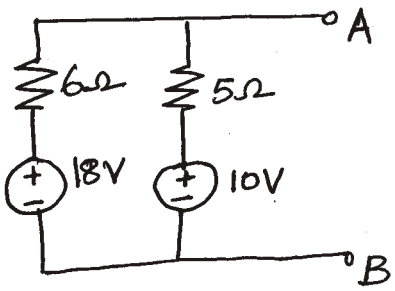
(2) Each question carries **ten** marks.

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

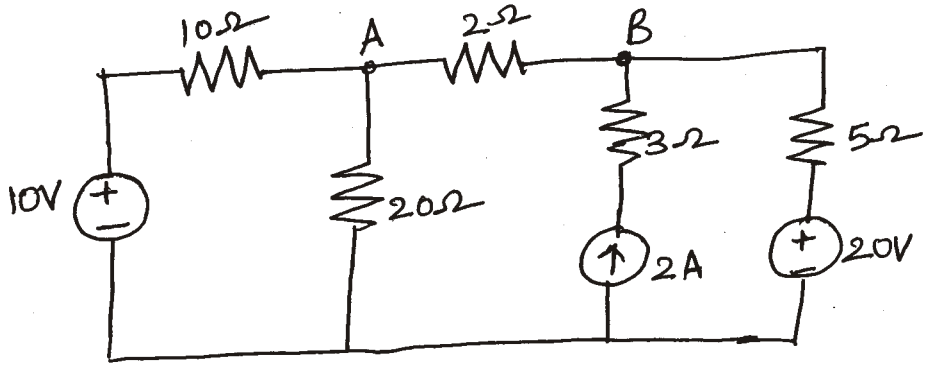
11. *(a)* Find the current through resistor R_3 for the electrical circuit shown below :



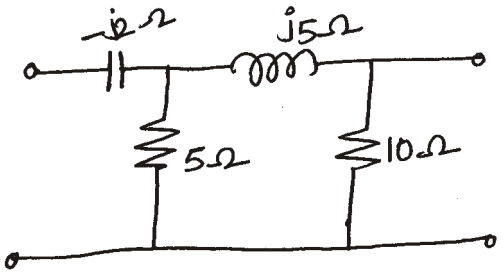
(b) Obtain its equivalent current source for the network shown below :



12. Find the current through 2 resistor by using superposition theorem for the circuit given below :

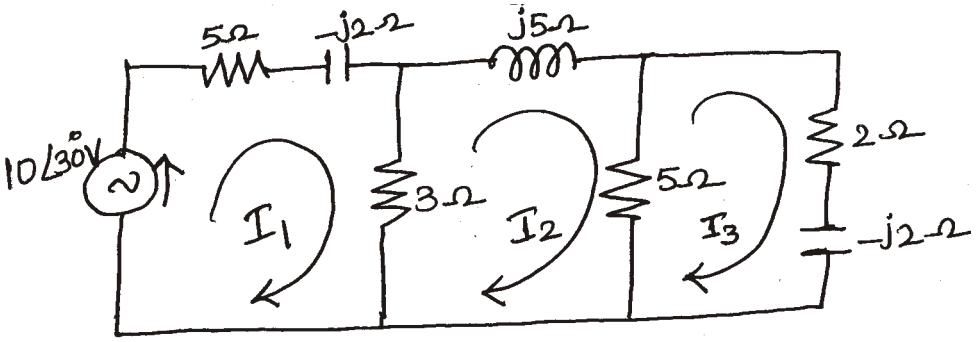


13. *(a)* Obtain the delta equivalent network for a given electrical network :

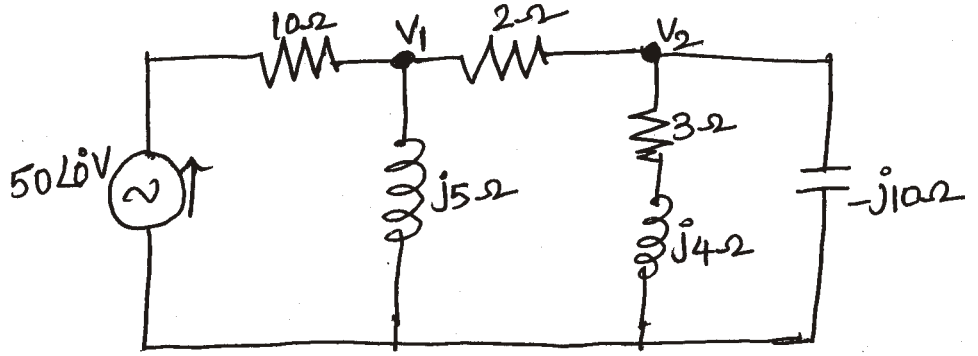


(b) Define maximum power transfer theorem for different loads.

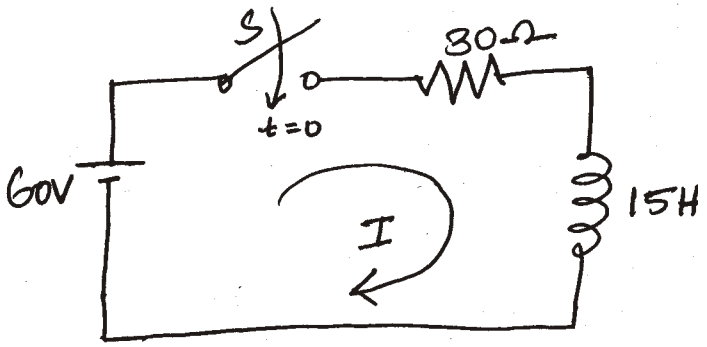
14. Find the unknown mesh currents I_1, I_2 and I_3 for the given network :



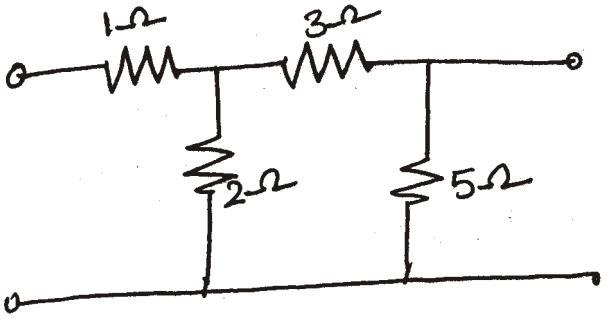
15. Find the node voltages V_1 and V_2 for the given network :



16. In a series *R-L* circuit, determine the current, voltage across the resistor and inductor at $t = 0{\cdot}2$ sec :



17. Find the *Z*-parameters for the given circuit :



18. *(a)* Design T-type attenuator to give an attenuation of 60 dB and to work in a line of 500 impedance.

(b) Design low-pass T-type filter having a cut-off frequency of 2 kHz to operate with a terminated load impedance of 500 .

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