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C14–EC–403

4457

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2017

DECE—FOURTH SEMESTER EXAMINATION

NETWORK ANALYSIS

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

PART—A 3×10=30

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

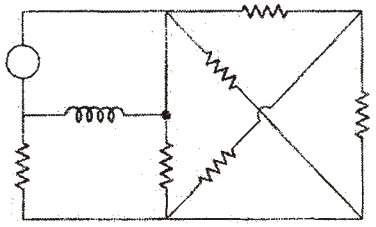
(2) Each question carries **three** marks.

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

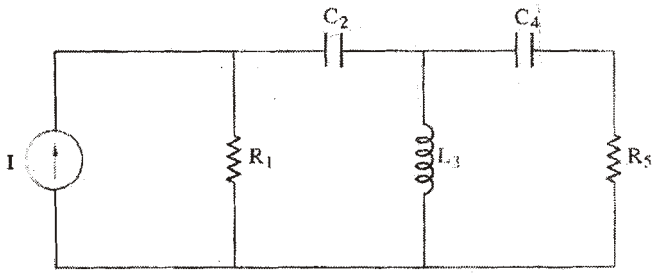
1. Define mutual inductance and coefficient of coupling.

2. Define Ohm's law and give its limitations.

3. Determine the number of mesh equations required for solving the network given below :



4. Draw the dual of given network :



5. Define reciprocity theorem.

6. Give the transformation formulae from star-to-delta network.

7. Define time constant and give its formula for *R-C* network.

8. Define the *h*-parameters of a two-port network.

9. Define the term 'propagation constant'.

10. Define pass band, stop band and cut-off frequency of a filter.

PART—B

10×5=50

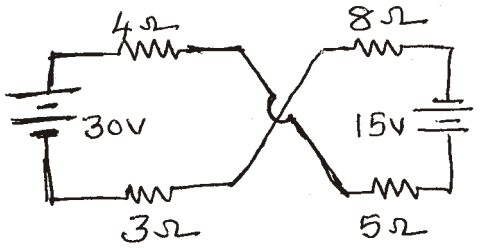
Instructions : (1) Answer *any* **five** questions.

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

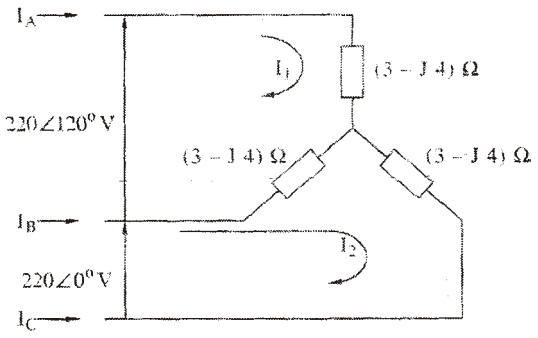
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain about ideal voltage source and ideal current source. 5

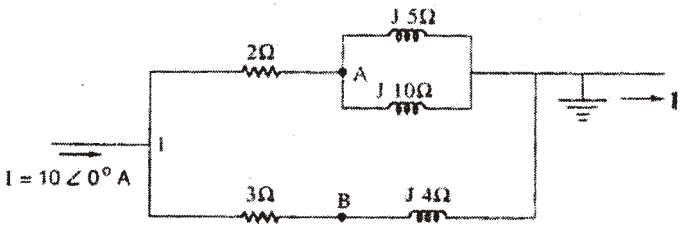
(b) Find the voltage drop across 5 resistor in the given network : 5



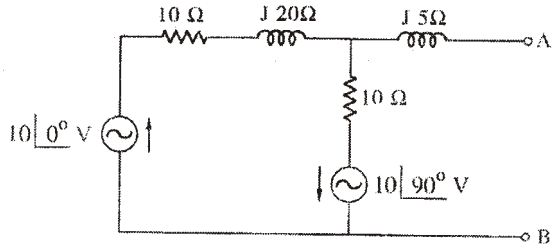
12. Find the currents I_A, I_B and I_C using mesh analysis :



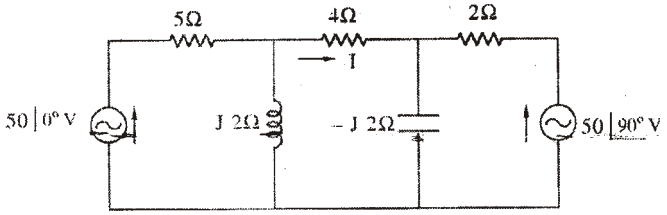
13. Find the voltage between A and B (V_{AB}) using nodal analysis :



14. Obtain the Norton equivalent network between AB :

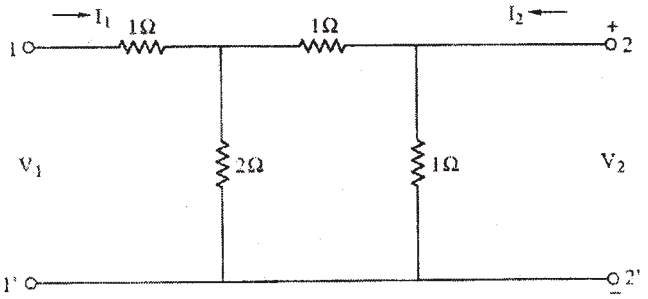


15. Find the current I in 4 resistor :



16. A series R-C circuit consists of R 5 k , C 20 F has a constant voltage V 100 V applied at t 0. Find the equations of i, V_R and V_C in this circuit (assuming initial charging on capacitor is zero).

17. Determine the transmission parameters of the network shown below :



18. Design a constant *K*-type low-pass filters of both *T* and types with cut-off frequency of 2 kHz and terminating resistance of 600 . 5+5=10

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