* 4457 *

C14-EC–403

# 4457

## BOARD DIPLOMA EXAMINATION, (C–14)
## MARCH/APRIL—2018
## DECE—FOURTH SEMESTER EXAMINATION

NETWORK ANALYSIS

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

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**PART—A** 3×10=30

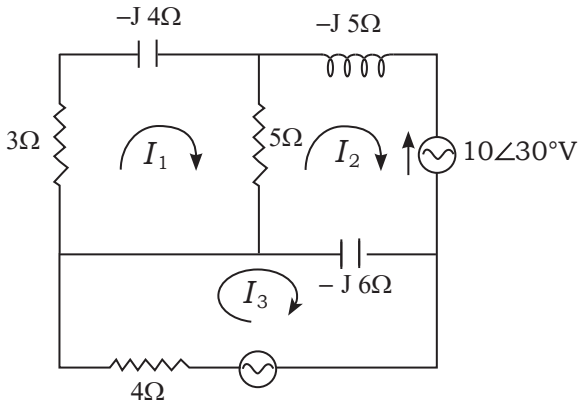
***Instructions :*** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

**1.** Distinguish between Active and Passive elements.

**2.** State Kirchoff's voltage law and Kirchhoff's current law.

**3.** Define branch, node and loop of a network.

**4.** Write the mesh current equations of the network given below.



**5.** Define Thevenin's theorem.

**6.** Give the transformation formulas from Star to Delta.

**7.** Define the time constant of an RL circuit.

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

**9.** Define the term characteristic impedance.

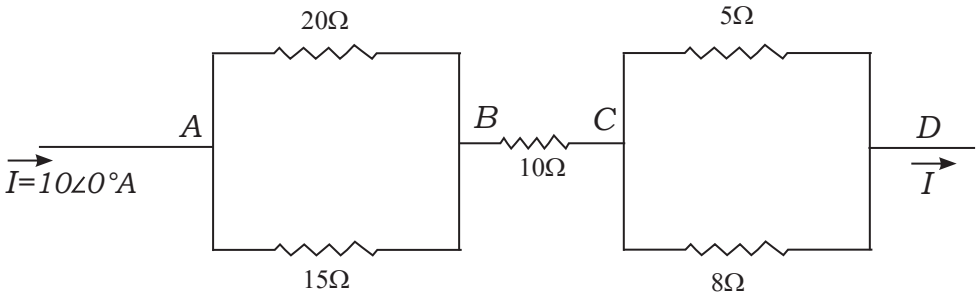
**10.** List the applications of equalizer.

## PART—B

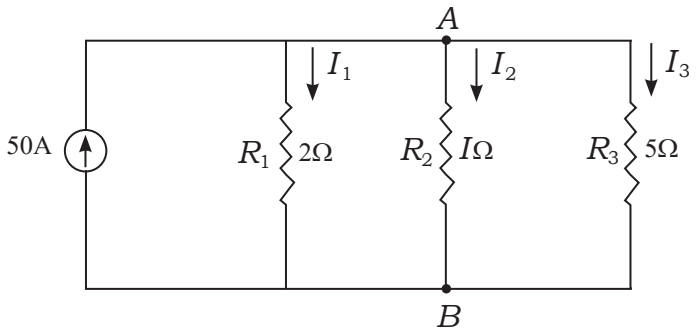
10×5=50

***Instructions :*** (1) Answer *any* **five** questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

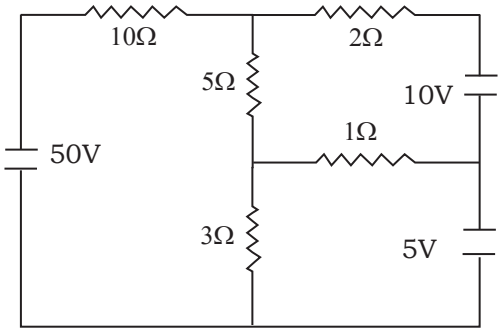
**11.** *(a)* In the following circuit find $V_{AB}$, $V_{BC}$ and $V_{CD}$:



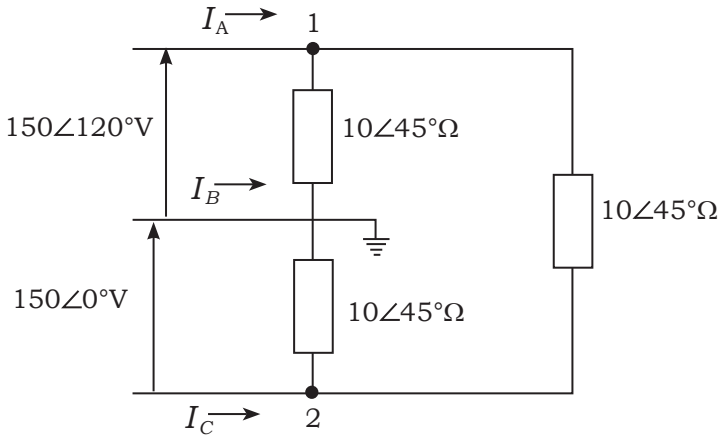
*(b)* Determine the currents $I_1$, $I_2$ and $I_3$ using KCL : 5



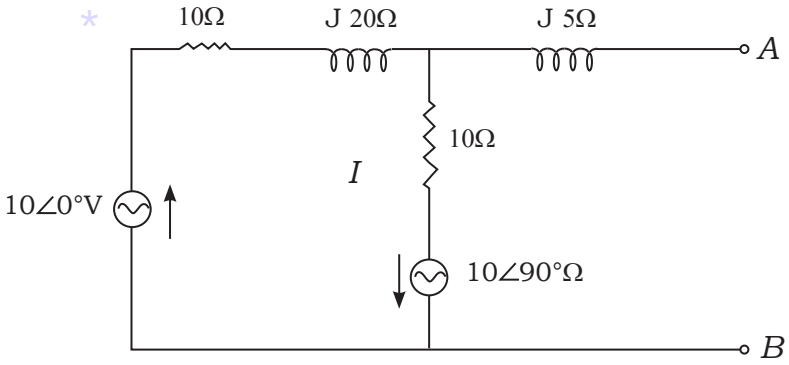

**12.** Determine the power absorbed by 5Ω resistor using mesh analysis.



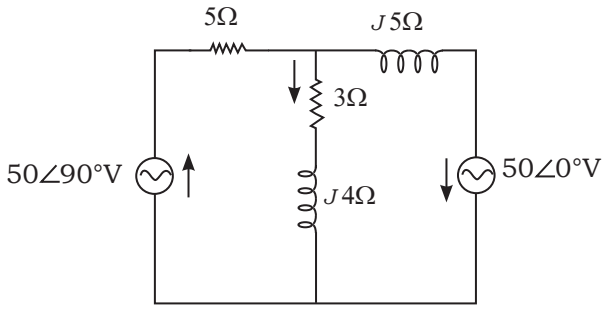

**13.** Find the currents $I_A$, $I_B$, $I_C$ using nodal analysis for the circuit shown below :



**14.** Obtain the Thevenin's equivalent circuit between terminals *AB*

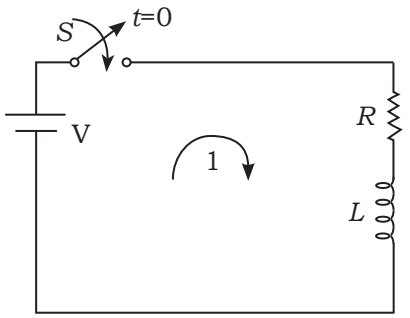



**15.** Determine the current *I* through $(3+j4)\Omega$ using superposition theorem.

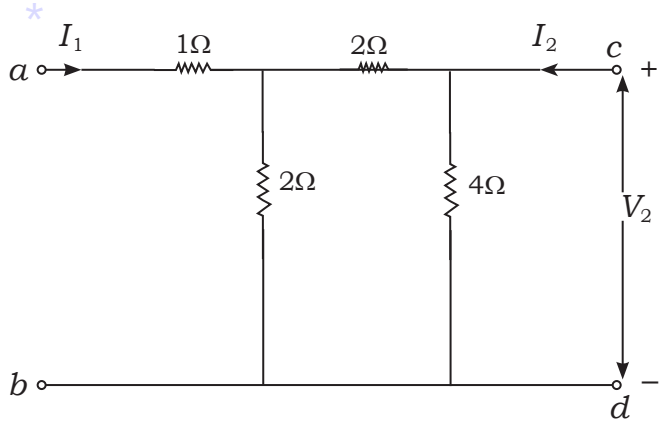



**16.** Derive the expressions for Voltages across *R* and *L* for $t > 0$

The swich is closed at $t = 0$



**17.** Find the $Y$ parameters for the network shown below:




**18.** Derive the expression for characteristic impedance of a symmetrical T-Network.

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