C14-AEI-**402**

4414

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV—2018

DAEIE—FOURTH SEMESTER EXAMINATION

NETWORK THEORY

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

PART—A 10×3=30

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

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

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

1. State Kirchoff's current law.

2. State Limitations of Ohm's law to solve complex circuits.

3. Draw the star and delta circuits.

4. Determine the number of meshes required to solve the given network.

5. Define mesh and node in circuits.

6. List any three limitations of Super position theorem.

7. List any three limitations of Reciprocity theorem.

8. State the importance of Q-factor.

9. A sinusoidal voltage $v(t) = 250 \sin 100t$ is applied across a pure inductor of 50 mH. Find current $i(t)$

10. A voltage given by $v(t)$ = 1000 sin wt is applied across a resistor of 100 Ω. Find current $i(t)$

PART—B

10×5=50

Instruction **:** (1) Answer any **five** questions and each question carries **Ten** marks.

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

11. *(a)* State Kirchoff's voltage law.

(b) Determine the current in all resistors in the circuit shown in Figure 1.

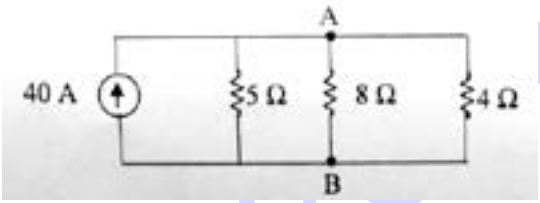

Figure 1

12. *(a)* Defferentiate between active and passive circuits.

(b) Define junction, branch and loop in circuits.

13. In the network Figure 2 shown below, determine the voltages of nodes 1 and 2 with respect to the selected reference.

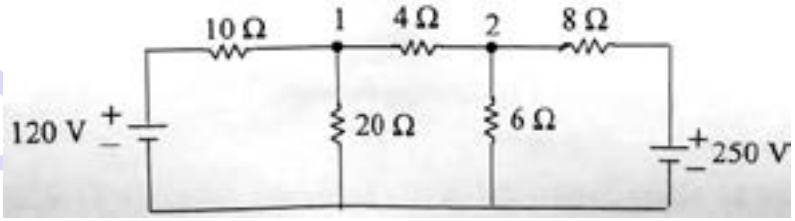

Figure 2

14. Find the current 1 by mesh current analysis for the circuit shown in Figure 3 below.

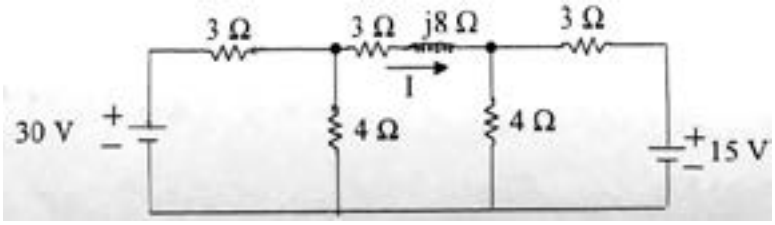

Figure 3

15. Determine the Thevinin's equivalent circuit across 'AB' for the given circuit shown in Figure 5.

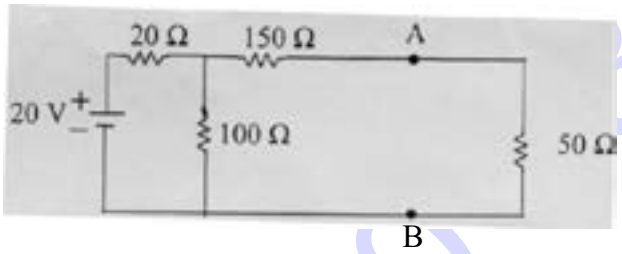

Figure 5

16. Find the value of R_L for which the source delivers maximum power to it in the network shown in Figure 6, and also find the maximum power transferred.

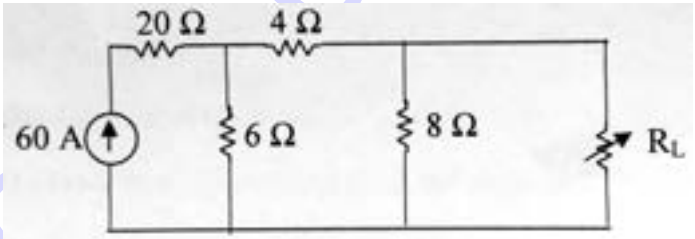

Figure 6

17. Derive relationship between voltage and current in pure resistive circuits.

18. Derive the impedance, current and phase angle in series R-C circuit.

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