



C14-AEI-402

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BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2018
DAEIE—FOURTH SEMESTER EXAMINATION
NETWORK THEORY

Time : 3 hours]

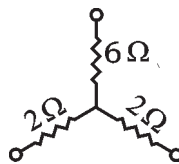
[Total Marks : 80

PART-A

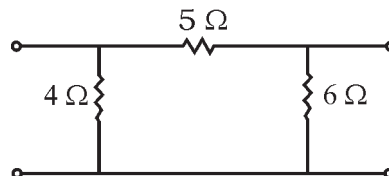
3×10=30

- 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 Ohm's law.
2. Define the terms 'junction' and 'branch'.
3. Convert the following star connection into delta connection:



4. Define tree and co-tree.
5. Write the duality for the circuit shown below:



6. List the advantages of maximum power transfer theorem.

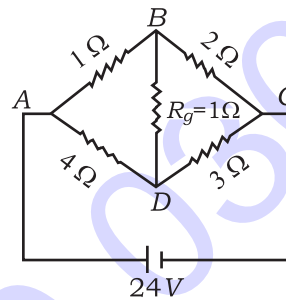
7. Distinguish between ideal voltage source and ideal current source.
- * 8. Derive the condition for resonance in series $R-L-C$ circuit.
9. Define power factor.
10. Define Q -factor series resonant circuit.

PART—B

10×5=50

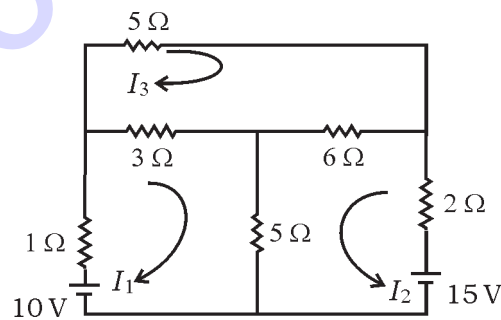
Instructions : (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.

11. Find the current through the galvanometer using KVL : 10



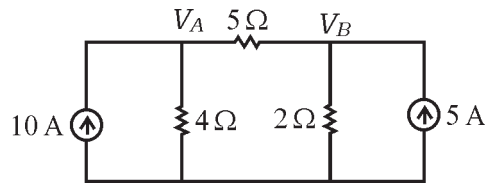
12. Derive the formula for star-delta transformation. 10

13. Find the branch currents using Cramer's rule: 10



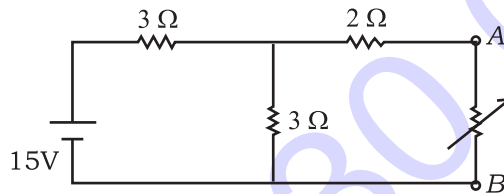
14. Find the V_A and V_B using nodal analysis by Cramer's rule: 10

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15. State and explain Thevenin theorem with an example. 10

16. Find R_L in the circuit shown below for maximum power transfer and also calculate maximum power: 10



17. Derive the relationship between voltage and current in a pure capacitive circuit fed with a.c. supply, and draw phasor diagram and waveforms. 10

18. A series $R-L-C$ circuit consists of $R=10$ ohm, $L=25$ mH and $C=100$ mF across 200V supply. Calculate (i) resonant frequency, (ii) current at resonance and (iii) Q -factor. 4+3+3
