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C14–AEI–**402**

4414

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2017

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. Distinguish between active and passive circuits.

2. Define KVL.

3. Define branch, loop.

4. Write the duality for voltage, kcl, mesh.

5. Define node and principle node.

6. Define ideal current source.

7. What are the limitations of superposition theorem?

8. Define *Q*-factor.

9. Draw the phasor diagram for voltage and current in a pure capacitive circuit.

10. Define series resonance.

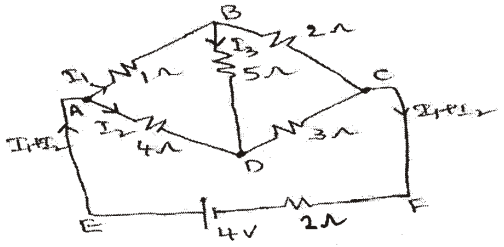
PART—B 10×5=50

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

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

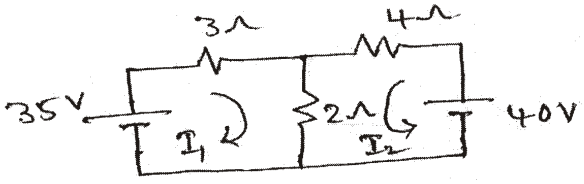
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Find the currents in each branch of the circuit by applying kVL. 10

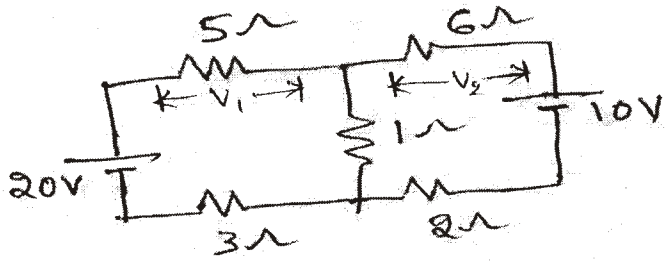


12. Derive the formula for star-delta transformations. 10

13. Find the currents in a circuit by loop analysis method by crammers rule. 10

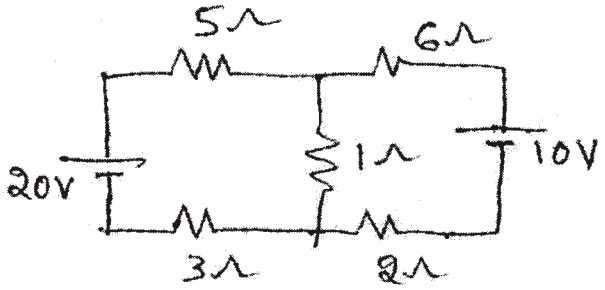


14. Find V_1 and V_2 for below circuit using nodal analysis by crammers rule. 10



15. State and explain maximum power transfer theorem with a example. 10

16. Determine the current through 1 ohm resistor using superposition theorem. 10



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

18. A resistor of 50 is connected in series with 100 F capacitor across 250 V, 50 Hz supply find impedance, current, phase-angle, power factor, power consumed. 10

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