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C16-AEI–106

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021 DAEI - FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

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. State the differences between active and passive elements.

2. Write the transformation formula for Star to Delta circuit.

3. Define the term phase difference.

4. State the formula for impedance and current in series R-L circuits.

5. Define the term admittance.

6. List any three applications of heating effect of electrical current.

7. State the heat produced due to flow of current.

8. State the relationship between voltages, current and turns ratio of transformed.

9. List the cooling methods of transformers.

10. Write the EMF equation of DC generator.

PART—B

10×5=50

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

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

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

11. Explain Superposition theorem and Norton's theorem.

12. Using Kirchhoff's laws, calculate the current through the galvanometer in the Wheatstone bridge network as shown in below Fig. 1.

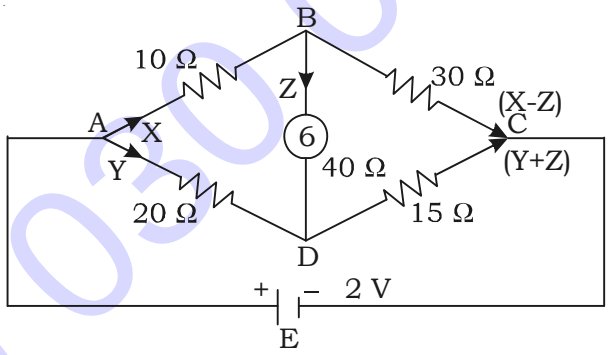

Fig. 1

13. A resistance of 5Ω an inductance of 4 mH and a capacitor of 500 μF are connected in series and a voltage of 200 volts 50 Hz is applied to the terminals. Determine *(a)* the impedance of the circuit, *(b)* the current drawn from the supply, *(c)* the power factor and the phase angle and *(d)* power.

14. Derive an expression for resonant frequency in series R-L-C circuit and draw the resonance curves.

15. Explain the working of electric iron with diagram.

16. Explain the working and construction of transformer with diagram.

17. Explain working principle of auto transformer and list its advantages.

18. A 4-pole DC generator is delivering 20 A to a load of 10Ω. If the armature resistance is 0·5Ω and the shunt field resistance is 50Ω. Calculate the induced e.m.f and efficiency of the machine.

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