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C09–AEI–304

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2016

DAEI—THIRD SEMESTER 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. Write any three differences between active and passive circuits.

2. Define Thevenin's theorem.

3. Define resonance.

4. Define *Q*-factor.

5. Write the expression for resonance frequency in a parallel resonance circuit.

6. Define back e.m.f. in a d.c. motor and give its formula.

7. State any three losses in a d.c. machine.

8. Define efficiency and write its formula.

9. State the relation among voltage, current ratios and turns ratio in a transformer.

10. List any three applications of induction motors.

PART—B

10×5=50

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

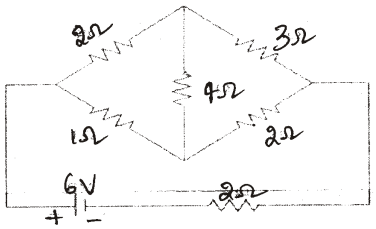
(2) Each question carries **ten** marks.

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

11. *(a)* Develop transformation formula from star to delta circuit. 5

(b) Three resistances of 20 each are connected in star. Find the equivalent delta resistances. 5

12. Determine the current, voltage across 4 resistor as shown in the figure below by using Kirchhoff's voltage law :



13. Derive impedance, power and power factor in a series *R-C* circuit.

14. Derive relationship between voltage and current in a pure resistive circuit.

15. Explain construction of d.c. machine along with a diagram.

16. Explain electrical and mechanical characteristics of d.c. series motors.

17. Explain construction and working of transformer along with a diagram.

18. List the constructional features of the following : 5×2=10

(a) Salient pole alternators

(b) Non-salient pole alternators

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