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C09–AEI–304

3214

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2014

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. Differentiate between active and passive circuits.

2. State Kirchhoff's current law.

3. Define resonance in series electric circuits.

4. State the salient features of *j*-notation method for solving parallel circuits.

5. Define *Q*-factor of series circuits.

6. State the methods to improve commutation.

7. Classify d.c. machines with reference to excitation.

8. Define back e.m.f. of d.c. motor.

9. Define transformer.

10. List the applications of synchronous motor.

PART—B

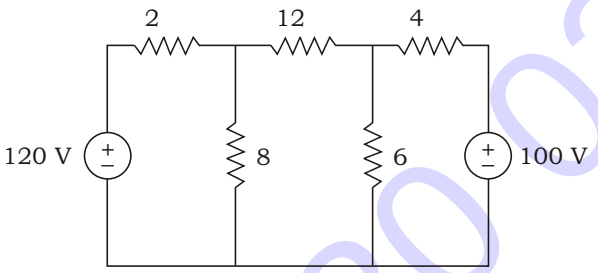
10×5=50

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 magnitude and direction of current through 12 ohms resistor, using superposition :



12. State and explain Norton's theorem with circuit diagrams.

13. Three voltages represented by e_1 30 sin , e_2 10 sin (/ 4) and e_3 25 cos (/ 4) act together in a circuit :

(a) Find an expression for the resultant voltage.

(b) Represent them by appropriate vectors.

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

15. *(a)* Explain the different losses in d.c. machines. 5

(b) State e.m.f. equation of a d.c. generator. 5

16. Explain the speed control of d.c. shunt motor by armature control method.

17. Explain the construction and working of a transformer with a neat sketch.

18. Explain the constructional features of non-salient pole-type alternator with a neat sketch.

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