3214

BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2013

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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define ideal voltage source.

2. State Kirchhoff's voltage law.

3. Define the terms phase and phase difference.

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

5. State the formulae for voltage, current and power factor for *R-L-C* series circuit.

6. Draw the circuit diagram of separately excited DC shunt motor.

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7. Define commutation in a DC generator.

8. State torque equation of a DC motor.

9. State different cooling methods of a transformer.

10. Draw the salient pole-type rotor of an alternator.

SUCCESS
ITS YOUR TURN

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. (a) State Thevenin's theorem.

(b) State Norton's theorem.

12. A network of resistances, if formed as follows :

AB = 9 ohms, *BC* = 1 ohm, *CA* = 1·5 ohms forming a delta and *AD* = 6 ohms, *BD* = 4 ohms, *CD* = 3 ohms forming a star internally in delta. Compute the network resistance as measured between—

(a) *A* and *B*

(b) *B* and *C*

(c) *C* and *A*

13. A coil of resistance 100 Ω and inductance 100 μH is connected with a 100 pF capacitor. The circuit is connected to a 10-V variable frequency supply. Calculate the *Q*-factor.

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14. (a) Compare between series resonance and parallel resonance.

    (b) Derive expression for resonant frequency in a *R-L-C* series circuit.

15. Explain simple lap and wave windings with sketch.

16. Draw and explain characteristics of a DC series generator.

17. Explain the construction of core-type transformer with sketch.

18. Explain the constructional features of three-phase induction motors with sketch.

Squirrel Cage
Phase Slip ring

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