3764

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2015

DEEE—SIXTH SEMESTER EXAMINATION

AC MACHINES—II

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 any three applications of synchronous motor.

2. Draw the phasor diagrams of synchronous motor at *(a)* lagging power factor and *(b)* leading power factor.

3. State the main parts of synchronous motor.

4. An 8-pole, 750 r.p.m. alternator supplies power to an 8-pole, 3-phase induction motor. Find the full-load speed when the slip is 4%.

5. State any three applications of 3- induction motor.

6. Draw the torque-slip curves of induction motor for different values of rotor resistance.

7. Draw the circuit diagram of a 1- capacitor-start capacitor-run induction motor.

8. State the method of reversal of rotation of capacitor-start motor.

9. Draw the speed-torque characteristic curve of capacitor-run motor.

10. State any three applications of universal motor.

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. What is the effect of change in excitation in synchronous motor on armature current and power factor at constant load?   10

12. A 2000 volt, 3- star-connected synchronous motor has an effective resistance and synchronous resistance of 0 2 and 22 respectively. The input is 800 kW at normal voltage and the induced e.m.f. is 2500 V. Calculate the line current and power factor.   10

13. Describe the construction of squirrel cage and slip-ring rotors in inductor motors with diagrams.   10

14. *(a)* Derive the relation between rotor full-load torque and maximum torque.   5

(b) Calculate the torque exerted by 6-pole, 50 Hz, 3-phase induction motor operating with a 5% slip which develops a maximum torque of 180 kg-m at a speed of 820 r.p.m. The resistance per phase of the rotor is 0 5 .   5

15. Explain the operation of rotor resistance starter with diagram.   10

16. *(a)* Draw the equivalent circuit of three-phase induction motor in comparison with transformer.

(b) Calculate the torque exerted by an 8-pole, 50 Hz, 3-phase induction motor operating with a 4% slip which develops a maximum torque of 150 kg-m at a speed of 660 r.p.m. The resistance per phase of the rotor is 0 5 .   10

17. Explain the working of shaded-pole induction motor with neat diagram.   10

18. Explain the construction and working principle of stepper motor with neat diagram.   10

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