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B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Third Semester

Electronics and Communication Engineering

EC 2201/EC 32/ EE 1204/ 10144 EC 302/080290008 – ELECTRICAL
ENGINEERING

(Regulation 2008/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Mention the applications of series motor.

2.   What is the significance of back emf?

3.   What do you mean by step down transformer?

4.   Draw the equivalent circuit of a transformer.

5.   Define 'slip' of an induction motor.

6.   Draw the Torque/speed curve of an induction motor.

7.   Why synchronous motor is called so?

8.   Mention some applications of synchronous motor.

9.   What is a sub-station?

10.   List down the principle insulating materials used in cables?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss in detail the most important characteristics of d.c shunt, series and compound generators. (8)

    (ii) What is the necessity of starters? Explain any one DC starter. (8)

Or

    (b) (i) Discuss in detail the methods of speed control of DC Shunt motor and DC series motor. (10)

    (ii) A 250 volt, d.c. shunt motor has armature resistance of 0.25 ohm, on load it takes an armature current of 50A and runs at 750 rpm. If the flux of motor is reduced by 10% without changing the load torque, find the new speed of the motor. (6)

12. (a) (i) Describe briefly about the open circuit and short circuit test on transformer. (10)

    (ii) What is meant by regulation of a transformer? (6)

Or

    (b) Discuss in detail the constructional details, principle of operation and emf equation of a transformer. (16)

13. (a) (i) Comment on the starting torque of cage type and slipring motor. Arrive at the condition for maximum starting torque. (10)

    (ii) A 12 pole, 3 phase alternator driven at a speed of 500 rpm supplies power to a 8 pole, 3 phase induction motor. If the slip of the motor at full load is 3%, calculate the full load speed of the motor. (6)

Or

    (b) Discuss in detail the various methods by which speed control of induction motor is achieved. (16)

14. (a) (i) Compare between synchronous and induction motor. (8)

    (ii) Discuss the procedure for starting a synchronous motor. (8)

Or

    (b) (i) A 60 kVA, 220 V, 50 Hz, 1-ϕ alternator has an effective armature resistance of 0.016 ohm and an armature leakage reactance of 0.07 ohm. Compute the voltage induced in the armature when the alternator is delivering rated current at a load powerfactor of unity and at 0.7 pf lagging. (8)

    (ii) Discuss the principle of operation of hysteresis motor. (8)

15. (a) (i) Explain with a neat diagram, a typical 66/11 KV sub-station. (10)

   (ii) Compare the merits and demerits of underground system versus overhead system. (6)

Or

   (b) (i) What is electric power supply system? Draw a single line diagram of a typical a.c power supply scheme. (8)

   (ii) Discuss the merits and demerits of EMVAC transmission system.(8)

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