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**Question Paper Code : 23440**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Electronics and Communication Engineering

EC 2201 – ELECTRICAL ENGINEERING

(Regulations 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different methods of excitation of Generator?
2. Define back e.m.f of D.C motor.
3. What do you mean by step down transformer?
4. Draw the equivalent circuit of a transformer.
5. Why an Induction motor cannot run at synchronous speed?
6. Why three phase induction motor needs a starter for starting purpose?
7. Differentiate between VR Stepper Motor and SR Stepper Motor.
8. What is a fixed coil in a D.C. Machine?
9. What are the components of electric power system?
10. What are the types of insulators?

PART B — (5 × 16 = 80 marks)

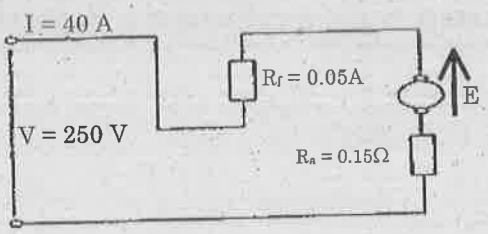
11. (a) A series motor has an armature resistance of 0.2 Ω and a series field resistance of 0.3 Ω. It is connected to a 240 V supply and at a particular load runs at 24 rev/s when drawing 15 A from the supply.

    (i) Determine the generated e.m.f. at this load.

    (ii) Calculate the speed of the motor when the load is changed such that the current is increased to 30 A. Assume that this causes a doubling of the flux.

Or

(b) A 250 V series motor draws a current of 40 A. The armature resistance is 0.15 Ω and the field resistance is 0.05 Ω. Determine the maximum efficiency of the motor shown below.




12. (a) (i) Explain about construction details and working principle of transformer. (8)

(ii) A efficiency of 1000 KVA, 110/220 V, 50hz, single phase transformer, is 98.5% at half full load at 0.8 power factor leading and 98.8% at full load unity power factor. Determine (1) Iron loss (2) Full load copper loss (3) Maximum Efficiency at unity power factor. (8)

Or

(b) (i) Drive the emf equations of the transformer. (8)

(ii) The equivalent circuit for a 200/400V step-up transformer has the following parameters referred to the low voltage side. Equivalent resistance = 0.15 Ω; Equivalent reactance = 0.37 Ω, Core loss component resistance = 600 Ω; Magnetizing reactance 300 Ω. When the transformer is supplying a load at 10A at a power factor of 0.8 lag, calculate (1) primary current (2) secondary terminal voltage. (8)

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) Discuss the following:

(i) EMF method of finding regulation of an alternator. (8)

(ii) Reluctance motor construction and principle of operation. (8)

Or

(b) Write short notes on:

(i) MMF method of determining regulation of an alternator. (8)

(ii) Hysteresis motor working principle. (8)

15. (a) With a neat diagram explain the structure of a power system.

Or

(b) Describe the various types of distribution system with necessary diagrams.

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