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Question Paper Code : 30936

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Third Semester

Electronics and Communication Engineering

EC 2201 — ELECTRICAL ENGINEERING

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

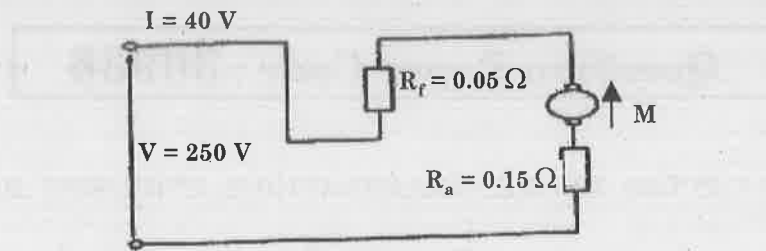
1. What are the different methods of excitation of Generator?
2. Define back e.m.f of D.C motor.
3. What do you mean by step down transformer?
4. Draw the equivalent circuit of a transformer.
5. A three-phase 2-pole motor is to have a synchronous speed of 6000 rev/min. Calculate the frequency of the supply voltage.
6. A stator winding supplied from a three – phase 60 Hz system is required to produce a magnetic flux rotating at 900 rev/min. Determine the number of poles.
7. What are V-curves?
8. Mention some of the applications of a stepper motor.
9. What are the various conventional and non-convention energy sources in India for power generation?
10. What are the advantages of EHVDC transmission system?

PART B — (5 × 16 = 80 marks)

11. (a) A series motor has an armature resistance of 0.2Ω and a series field resistance of 0.3Ω . It is connected to a 240 V supply and at a particular load runs at 24 rev/s when drawing 15A 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 30A. Assume that this causes a doubling of the flux.

Or

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



12. (a) Draw and explain the no-load phasor diagram and equivalent circuit of a single-phase transformer.

Or

- (b) Explain in detail the O.C. test and S.C. test on a single-phase transformer and what are the information's that can be obtained form the above tests?

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) (i) With the neat sketch explain the structure of general transmission and distribution system. (8)
- (ii) A generating station has a maximum demand of 25 MW. Load factor is 60%. plant capacity factor is 50% and plant use factor is 72%. Find the reverse capacity and daily energy produced. (8)

Or

- (b) (i) Draw the schematic layout of EHVDC transmission system and explain. (8)
- (ii) Explain briefly about insulators and cables. (8)