

6634
BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING
A.C. MACHINES-II
FIFTH SEMESTER EXAMINATION

Time: 3 Hours

Total Marks: 80

PART - A (3m x 10 = 30m)

Note 1: Answer all questions and each question carries 3 marks

2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. **Why synchronous motor runs only at synchronous speed**
2. **Write the phenomenon of hunting.**
3. **The rotor speed of a 6-pole, 50 Hz induction motor is 960 rpm. Calculate the % slip**
4. **Compare synchronous motor with induction motor in any three aspects**
5. **List the necessary modifications to be done in a d.c. series motor so that it can work on a.c. supply satisfactorily**
6. **Write short notes on a.c. series motor**
7. **State any three electrical characteristics in selecting a motor for a drive**
8. **List the types of loads based on time and duty**
9. **What is rheostatic braking**
10. **State any three advantages of electrical braking over mechanical braking**

PART - B (10m x 5 = 50m)

Note 1: Answer any five questions and each carries 10 marks

2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. **A 3-phase synchronous motor absorbing 50 KW is connected in parallel with a factory load of 200 KW having a lagging p.f. of 0.75. If the combined load has a p.f. of 0.95 lagging, what is the KVA rating of synchronous motor. Also, determine the p.f. at which synchronous motor is working**
12. **Explain the star/delta starter of a 3-phase induction motor with the help of neat sketch**

13. Explain the speed control method of 3-phase induction motor (i) by changing the supply frequency and (ii) by cascade connection methods with neat sketches
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- 14A. Derive an expression for back emf and load angle in synchronous Motor for lagging p.f
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- B. Compare slip-ring and squirrel cage induction motors in any five aspects
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15. Explain the construction and working principle of stepper motor with a neat diagram
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16. Explain the working principle of a single phase induction motor by double field revolving theory
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17. A motor has following duty cycle. 100HP for 10 minutes, No-load for 5 minutes, 60HP for 8 minutes, No-load for 4 minutes which is repeated indefinitely. Determine a suitable size of a continuously rated motor
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18. A 440V, 40KW, 600rpm dc shunt motor has a full load efficiency of 90%. The field resistance is 220 ohms and the armature resistance is 0.1 ohms. Find the speed under regenerative braking
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