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BOARD DIPLOMA EXAMINATION
MARCH/APRIL - 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. Explain briefly the phenomenon of Hunting
2. What is relationship between E_b and V when synchronous motor is operated at (i) under excitation (ii) over excitation (iii) critical excitation (at unity p.f.)
3. Draw the circuit diagram of an 3-phase induction motor for No-load test
4. A 6-pole, 50Hz, induction motor runs at some speed and the frequency of rotor emf at this speed is observed to be 120 cycles per minute. Calculate the speed of motor
5. List the applications of universal motor
6. List the necessary modifications to be done in a d.c. series motor so that it can work on a.c. supply satisfactorily
7. State the necessity of load equalization
8. Define (a) continuous rating (b) short time rating (c) intermittent rating of motors
- * 9. List any three features of a good braking system
10. What is rheostatic 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. Explain briefly the working principle of synchronous motor and the Procedure to start a synchronous motor

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12. A 200V, 5 HP, 50 Hz, 3-phase 4 pole star connected induction motor gave the following test data (line values):

- I. No load test : 200 V, 5 A, 350 W
- II. Blocked rotor test: 100V, 26A, 1700 W

Construct the circle diagram and determine (a) the line current and p.f. at full load (b) the maximum torque and starting torque in terms of full load torque (iii) slip at maximum torque and maximum torque in N-m. The rotor copper losses at standstill are half of the total copper losses

13. Explain about different starting methods of a 3-phase induction motor

14A. Explain the starting method of synchronous motor by using damper winding

B. Explain the speed control method of 3-phase induction motor by changing the supply frequency

15. Explain the working principle of a a.c. series motor with a neat sketch

16. Explain double field theory and cross field theory

17. (a) Distinguish between a.c. drives and d.c. drives in any five aspects

(b) Explain the necessity of load equalization

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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