PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JUN 2023

Semester : Semester IV - 2021
Course Code : EEE2017
Course Name : Sem IV - EEE2017 - Electrical Machines-II
Program : EEE

Date : 9-JUN-2023
Time : 9.30AM - 12.30PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS   (10 X 3 = 30M)

1. List the 3 Methods of Starting of 3-Phase Induction Motors

(CO2) [Knowledge]

2. Circle diagram of 3 Ph Induction Motor is useful to obtain the speed-torque characteristics of a motor without loading it. Before the circle diagram can be drawn, three tests must be made to collect the details to draw the same. List the datas that are needed for drawing Circle diagram.

(CO2) [Knowledge]

3. Write 3 salient features of a synchronous motor

(CO4) [Knowledge]

4. The proper method of connecting an alternator to the infinite busbars is called synchronizing. State the Conditions for Parallel operation of Alternator with Infinite Busbars

(CO3) [Knowledge]

5. Like a d.c. generator, an alternator also has an armature winding and a field winding. But there is one important difference between the two. What is that difference

(CO4) [Knowledge]

6. A 4pole ,3 phase Induction Motor operates from a supply whose frequency is 50 Hz. Determine its Synchronous Speed

(CO1) [Knowledge]

7. What is the significance of Rotating Magnetic Field" (RMF) in 3Ph Induction Motor working principle
(CO1) [Knowledge]

8. How to change the direction of rotation of a 3-phase induction motor

(CO1) [Knowledge]

9. What do you mean by the term Synchronous Reactance Xs of synchronous generator

(CO3) [Knowledge]

10. What are the various losses during the energy conversion in a 3 phase Induction Motor

(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS (3 X 10 = 30M)

11. One of the most important features of a synchronous motor is that by changing the field excitation, it can be made to operate from lagging to leading power factor. Describe the Effect of Changing field excitation at constant load of a synchronous motor with appropriate phasor diagram

(CO4) [Comprehension]

12. By using the data obtained from the no load test and the blocked rotor test, we can study the performance of 3 Ph Induction Motor. How these datas can be used to study the performance of the motor? . Explain step by step to explain the procedure and draw the relevant diagrams

(CO2) [Comprehension]

13. What are the two main points that are worth noting about the armature reaction in an alternator. Illustrate with appropriate diagrams these important points, considering three cases with regard to load power factor-

(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS (2 X 20 = 40M)

14. A 500 kVA 3 phase ,50 Hz star connected alternator has a rated line to line terminal voltage of 3.3 kV. The resistance and synchronous reactance per ph are 0 .3Ω and 0.4 Ω respectively. The expected No load terminal voltage should not be less than 2100 V / phase. Do the necessary calculations to verify the same for 0.8 pf lagging .Hence Calculate the voltage regulation at full load.

(CO3) [Application]

15. The power input to a 3 phase IM is 60kW, the stator losses is 1kW. Name the different losses that can be computed from the given data if the motor is running with a slip of 3%.Compute the mechanical power developed

(CO2) [Application]