

Question Bank

Electrical Machines and Measurements

DEPARTMENT OF
ELECTRONICS AND INSTRUMENTATION
ENGINEERING

2 Marks

Unit-1

1. Why a DC series motor cannot be started on no load?
2. What is back EMF? Explain the significance of a back EMF?
3. Enumerate the factors on which the speed of a DC motor depends?
4. List the different types of losses in D.C machine.
5. What is the need for starter in a DC motor?
6. State the different method of speed control of DC motor?
7. Define the term armature reaction in dc machines
8. Give some applications of D.C motor?

Unit-2

1. State the principle of operation of a transformer.
2. Why transformer is rated in KVA?
3. Define voltage regulation of Transformer.
4. Define all day efficiency of Transformer?
5. Draw the Equivalent circuit of Transformer.
6. Why are breathers used in transformers?
7. Give the emf equation of a transformer and define each term.
8. A 1100/400 V, 50 Hz single phase transformer has 100 turns on the secondary winding. Calculate the number of turns on its primary

Unit-3

1. List out the methods of speed control of cage type and slip ring induction motor?
2. What is meant by crawling and cogging of induction motor?
3. Compare slip ring rotor and cage rotor of an induction motor?
4. Define slip and slip Frequency of an induction motor.
5. Derive the conditions for maximum torque for 3-phase induction motor under (i) Starting condition (ii) Under running condition.
6. Draw the Slip Torque characteristics of induction with increasing resistance.

7. Differentiate Salient pole and non salient pole alternator
8. List the application of Brushless alternator.
9. State the condition for parallel operation of alternator.

Unit-4

1. Why single phase induction motor is not self starting.
2. List the different types of single phase induction motor.
3. List the application of different types of Single phase induction motor.
4. List the advantages of different types Single phase induction motor.

Unit-5

1. Differentiate moving iron and moving coil instruments.
2. Why Kelvin's bridge is used for measuring low resistance.
3. What is standard? What are the different types of standards?
4. Mention the functions performed by the measurement system.
5. Why the PMMC instruments are not used for AC measurement?
6. State the essential torques required for successful operation of an instruments.

15 Marks:

Unit-1

1. Derive the emf equation of Generator
2. Derive the Torque equation of DC Motor
3. Explain the working principle of DC motor
4. Explain the load characteristics of DC shunt and series generator with suitable graph.
5. Why starter is necessary for DC motor? Explain any one type of DC shunt motor starter with suitable diagram.
6. Explain the construction and working principle of Generator.
7. Describe the different speed control techniques available for DC shunt and series motor.

Unit-2

1. Derive an emf equation of Transformer
2. Explain construction and working principle of Transformer.
3. Describe the working of three phase Transformer and explain different transformer connections.

4. Explain OC and SC test of Transformer and draw its Equivalent circuit.
5. Outline the working of Autotransformer and derive the copper saving than two winding transformer
6. Draw and explain the vector diagram for different load conditions.
7. Problems in Equivalent circuit.

Unit-3

1. Derive an emf equation of Alternator.
2. Explain the working principle of 3 phase induction motor.
3. Why starter is necessary for IM? Explain any one type of starter with suitable diagram.
4. Explain the construction and working of Alternator.
5. Explain different types of speed control of IM
6. Illustrate any one type of paralyzing of alternator.
7. Draw and explain the Speed –Torque characteristics of IM.

Unit-4

1. Explain Double field revolving theory.
2. Explain any one type of single phase induction with DFRT.
3. Describe the construction and working of Stepper motor.
4. Describe the construction and working of Shaded pole motor
5. Describe the construction and working of Universal motor
6. Describe the construction and working of repulsion motor

Unit-5

1. Explain the construction and working of moving iron type instruments
2. Explain the construction and working of moving coil type instruments
3. Illustrate the power measurement using dynamometer type wattmeter.
4. Describe the power measurement using two wattmeter methods.
5. Explain how resistance is measured by using Wheatstone bridge method.
