

DIPLOMA OF VOCATION
Industrial Electronics
Subject: Electrical Machines
Subject Code: EDES-309
Semester: Fifth
January 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

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SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Why starter is necessary for DC motor?
- B. Write down the relation between phase and line voltage in three phase system
- C. Why the primary of transformer draws current from the mains on no load condition?
- D. Write down the points on CT and PT.
- E. Define the basic principle of generator.
- F. Which of the following two windings produces/induces the working flux and working EMF respectively?
 - a) Field winding and armature winding
 - b) Armature winding and field winding
 - c) Both are produced in field winding
 - d) Both are produced in armature winding
- G. Explain the function of commutator in DC machines
- H. What will happen to the connected three phase induction motor if one of the phases of the supply breaks down
- I. The stator frame and end covers in synchronous and induction machines are designed to _____
 - a) Carry the magnetic flux
 - b) To serve as a mechanical support
 - c) To provide cooling or to carry induced emf
 - d) Any of the mentioned
- J. Write down the torque equation of a DC motor

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Discuss the power and power factor measurement in three phase system by 2-wattmeter method.
2. In a 25 KVA, 2000/200 V transformer the iron and copper losses are 350 W and 400 W respectively. Calculate the values of iron and copper losses which will give maximum efficiency and also calculate the value of maximum efficiency.
3. Define the Faraday Law of Electromagnetism and explain in detail.
4. Define voltage regulation of a transformer and derive its expression using the equivalent circuit.
5. Discuss different methods of speed control of a DC motor.
6. Explain the principle of operation of three phase induction motor.
7. An 8 pole generator has 500 armature conductors and has a useful flux per pole of 0.065 Wb. What will be the emf generated at 1000 rpm?
8. Explain the principle, construction and working of synchronous machines in detail.

==END OF PAPER==