

SAMPLE PAPER ON ELECTRICAL MACHINE

Instruction:

- Total time allotted-3 hrs
- All questions are compulsory
- Total marks-70
- Answer the questions in your own words

This sample paper is divided into 3 parts:-

Question Type	Marks allotted
Very short answer questions	1 marks each
Short answer question	5 marks each
Long answer question	15 marks each

SECTION-A

1. The materials in order of decreasing eddy current loss will be

- (A) iron, wood, aluminium
- (B) iron, aluminium, wood
- (C) aluminium, iron, wood
- (D) wood, aluminium, iron.

Answer: C

2. For a 5 kW DC motor the number of slots per pole should be

- (A) 4
- (B) 8
- (C) 12
- (D) 16.

Answer: B

3. In a synchronous generator in order to eliminate the fifth harmonic the chording angle should be

- (A) 9°
- (B) 18°
- (C) 27°
- (D) 36° .

Answer: D

4. Inter poles in DC machines are provided to reduce

- (A) sparking
- (B) armature reaction
- (C) iron loss
- (D) efficiency.

Answer: A

5. Skewing in the slots of an induction motor is provided to reduce

- (A) iron loss
- (B) noise
- (C) harmonics
- (D) temperature rise.

Answer: C

6. Sometimes a reactor is connected in series with a transformer to

- (A) improve regulation
- (B) control fault current
- (C) improve efficiency
- (D) improve power factor.

Answer: B

7. DC motor yoke is generally made of

- (A) wood
- (B) copper
- (C) aluminium
- (D) steel.

Answer: D

8. For the same rating, the cost of an induction motor as compared to that of a DC motor is

- (A) more
- (B) less
- (C) same
- (D) nearly the same.

Answer: B

9. In case of electrical machines, the intermittent rating as compared to its continuous rating is

- (A) more
- (B) less
- (C) same.
- (D) non of these

Answer: A

10. For the use of mush windings in 3 ϕ induction motors, the slot should be

- (A) semi-closed
- (B) open

- (C) closed
- (D) either (a) or (b).

Answer: A

SECTION-B

1. How can we use a transformer to step down the voltage which is given in the input of this?
2. What is mutual induction? How can this help us produce electric field into different components?
3. What is leakage flux? Comment if this is useful or harmful in the transformer?
4. What are the different types of losses in electric transformers? Explain eddy current loss in details with the help of labelled diagram?
5. What is voltage, current and resistance? Derive their relation with each others?

SECTION-C

1. According to figure, give Ideal power equation?

2. What is resonance circuit? Derive a formula for the resonance frequency used in this circuit? What is Gauss's law for electrical field? Write all the Maxwell's equations as well being used in this?

3. What is Faraday's law? Give proof and write all the Faraday's equations going to be used in this law? Write the differences between DC & AC?

4. Define the following terms given below in brief:

- (i) Filters
- (ii) Form factor
- (iii) Three phase system

What is electromotive force(emf)? Give all the mathematical terms included in details?

5. What is Electrical technology? What are the applications of Electrical technology? What is Lorentz force in magnetic field? What is the significance of this?

