S. B. Roll. No.....

**ELECTRICAL MACHINES-I**
**4th Exam/Elect/3529/Nov'24**
**(For 2018 Batch Onwards)**

**Duration: 3Hrs.** **M.Marks:75**

## SECTION-A

**Q1. Fill in the blanks.** **15x1=15**

a. Eddy currents in a transformer can be minimized by _____.
b. The direction of induced e.m.f. can be determined by applying _____.
c. Shunt motor is known as _____ speed motor.
d. A series motor is best suited for driving _____.
e. For cranes and hoists best suited motor is _____.
f. Transformers are rated in _____.
g. In dc motors starter is used to _____ the starting current.
h. To determined the copper losses in a transformer _____ test is performed.
i. The output of a transformer is taken in _____.
j. The commutator segments of a DC machines are made up of _____.
k. Brushes of DC motor are usually made of _____.
l. A transformer will have zero efficiency at _____.
m. Efficiency of a 3-phase transformer is _____ than a single phase transformer.
n. Power transformers are designed for low _____ losses.
o. Auto transformer is a _____ winding transformer.

## SECTION-B

**Q2. Attempt any six questions.** **6x5=30**

i. Explain the Field control method for speed control of DC series motor?
ii. What is back e.m.f.? What is its significance?
iii. Drive torque equation for a d.c. motor?
iv. Can a transformer work on dc? Explain
v. Give the applications of DC motors.
vi. Explain the use of instrument transformer.
vii. What are the conditions for a successful parallel operation of transformers?
viii. Write a note on cooling of a transformer.
ix. Why is the transformer rated in kVA?

## SECTION-C

**Q3. Attempt any three questions.** **3x10=30**

a. Explain the construction and working of ON-Load tap changer with the help of neat diagram.
b. Explain the working principle of transformer and drive the e.m.f. equation of a transformer.
c. Explain the construction, working and applications of an auto-transformer.
d. What is the necessity of a starter? Explain with the neat diagram the construction and working of a 3 point starter.
e. Name the various parts of a d.c. machine and give the function of each part.