Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5559]-156

S.E. Electrical (II Semester) EXAMINATION, 2019
ELECTRICAL MACHINES—I
(2015 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Attempt *all* questions.
(*ii*) Figures to the right indicate full marks.

1. (*a*) Draw equivalent circuit of transformer referred to primary side. Explain all the parameters involved in the equivalent circuit. [6]

(*b*) With suitable diagram explain constructional details of welding transformer. [7]

Or

2. (*a*) Draw circuit diagram and phasor diagram of 3-phase star-star connected transformer. Explain it in brief. [6]

(*b*) A transformer rated 150 kVA has full load copper loss of 2.25 kW and iron loss of 2.25 kW. It is loaded as follows :

Number of Hrs. in a day	Loading	Power Factor
3	100%	Unity
4	50%	Unity
17	0%	—

Determine all day efficiency. [7]

P.T.O.

3. (*a*) Compare Lap winding with wave winding (Minimum *six* points of comparison expected). [6]

(*b*) Why is starter needed for DC Motor ? State the types of starter used in DC motors. [6]

Or

4. (*a*) Derive torque equation of DC motor with usual notations. [6]

(*b*) Explain flux control method for controlling speed of DC shunt motor. State *two* advantages of this method. [6]

5. (*a*) Draw and explain torque-slip characteristics of 3-phase induction motor. Clearly mark all critical points in the characteristics. [7]

(*b*) Derive the condition for maximum starting torque for 3-phase induction motor with usual notations. [6]

Or

6. (*a*) Draw power flow diagram of 3-phase induction motor and explain each stage. [7]

(*b*) Compare squirrel cage induction motor with slipring induction motor (Minimum *six* points expected). [6]

7. (*a*) Why is 3-phase induction motor called generalised transformer ? State any *three* points of similarities between transformer and 3-phase induction motor. [6]

(*b*) With suitable diagram explain working of DOL starter. [6]

Or

8. (*a*) Draw circle diagram of 3-phase induction motor. State the steps involved in drawing circle diagram. [6]

(*b*) Draw exact equivalent circuit of 3-phase induction motor and explain each parameter in it. [6]