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

Seat No.	

[5559]-134

S.E. (E & TC and Electronics) (I Sem.) EXAMINATION, 2019

ELECTRICAL CIRCUITS AND MACHINES

(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

(*ii*) Figures to the right indicate full marks.

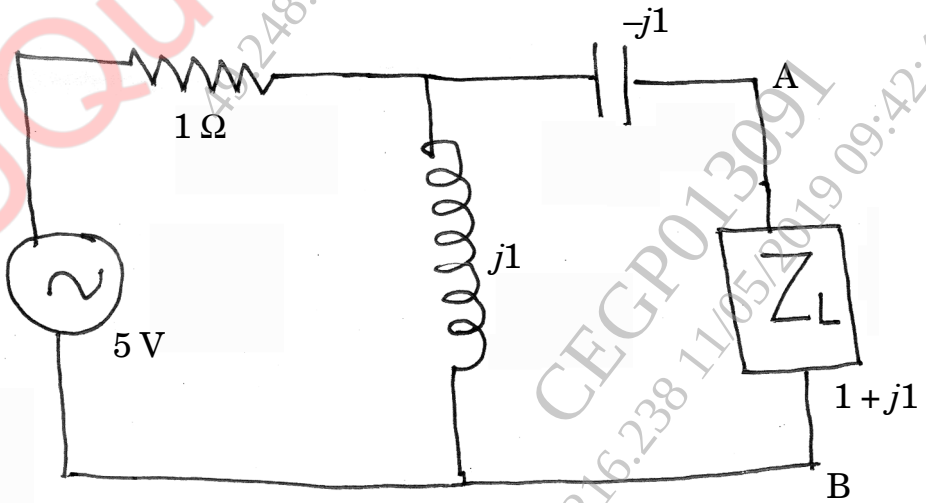
(*iii*) Neat diagrams must be drawn wherever necessary.

(*iv*) Use of non-programmable electronic pocket calculator is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) Explain construction and working of Potential Transformer. [5]

(*b*) Calculate current through Z_L using Thevenin's theorem. [7]



P.T.O.

Or

2. (*a*) State and explain superposition theorem. [5]

(*b*) A 50 kVA 230/400 V, 50 Hz single-phase transformer gave the following test results :

	V	A	W
OC Test (H.V. open) —	230	10	500
SC Test (L.V. shorted) —	8	62.5	200

Calculate efficiency and voltage regulation at full load and 0.8 p.f. lagging. [7]

3. (*a*) Sketch and explain D.C. series motor characteristics. [6]

(*b*) The Input to 3-phase, 400 V, 6 pole, 50 Hz Induction motor is 10 kW, while running at 950 rpm. The Stator losses are 600 watt and Mech. losses are 400 watt. Calculate motor output and its efficiency. [7]

Or

4. (*a*) Compare Squirrel Cage type and phase wound type rotor construction of 3-phase induction motor. [6]

(*b*) A 250 V d.c. shunt motor has an armature resistance of 0.5 ohm and field resistance of 125 ohm. It drives a load at 1000 rpm and draws current of 25 Amp. Calculate the armature current drawn and speed of motor if field resistance is increased upto 150 ohm and load is kept constant. [7]

5. (*a*) State applications of :

(*i*) BL D.C. motor

(*ii*) Reluctance motor and

(*iii*) Universal motor. [6]

(*b*) What is Brushless D.C. motor ? Explain working and construction of any *one* type of BL D.C. motor. [7]

Or

6. (*a*) State working principle of Universal Motor. Classify them and sketch Torque-Speed characteristic of Universal motor. [6]

(*b*) Explain construction and working of Reluctance motor. Sketch its Torque-Speed characteristic. [7]

7. (*a*) What are capacitor-start induction motors ? Explain its working and state its applications. [6]

(*b*) What do you mean by stepper motor ? How does it work ? State its types and applications. [6]

Or

8. (*a*) Explain construction and working of single-phase shaded pole induction motor and state its applications. [6]

(*b*) Explain construction and working of D.C. Servo-motor and state its applications. [6]