

ELECTRICAL TECHNOLOGY

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

- Write any five differences between star and delta connections.
- Write the equations for active power, reactive power and true power for a two wattmeter method.
- Briefly explain Swinburne's test.
- Draw the magnetization characteristics of series and shunt DC generators.
- List various losses occurs in transformers.
- What is meant by OC and SC tests? Explain.
- Write the expressions for maximum torque and starting torque.
- Write any four differences between cage and wound rotor machines.
- Write about E.M.F voltage regulation method.
- Define the terms pitch factor and distribution factor.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- Derive the relation between line and phase voltages in star connected network
- A delta connected 3-phase load has a resistance of 6Ω and inductive reactance of 8Ω in each branch. Write the phasor expressions for line currents and phase currents. Calculate the total power. Line voltage is 220 V.

OR

- Analyze the measurement of power in three phase circuits using:
 - Two wattmeter method.
 - Three wattmeter method.

UNIT – II

- Derive the E.M.F equation of D.C machine.
- A DC generator has an armature EMF of 100 V. When the useful flux per pole is 20 mWeb and the speed is 800 rpm. Calculate the generated EMF: (i) With the same flux and a speed of 1000 r.p.m. (ii) With a flux per pole of 20 mWeb and a speed of 900 r.p.m.

OR

- Explain the speed control methods of:
 - D.C shunt motor.
 - D.C. series motor.

UNIT – III

- Explain the principle of operation of single phase transformer.
- The primary and secondary windings of a 40 KVA, 6600/250 V single phase transformer have resistances of 10Ω and 0.02Ω respectively. The total leakage reactance is 35Ω as referred to the primary winding. Find full load regulation at a p.f. of 0.8 lagging.

OR

- Write about following:
 - Various losses in transformers.
 - Transformer on load condition.

UNIT – IV

- Explain production of a rotating magnetic field.
- Derive the expressions for maximum torque and starting torque.
- Draw the torque- slip characteristics of induction motor.

UNIT – V

- Write the differences between salient pole and non-salient pole motor.
- Derive E.M.F equation of synchronous Generator.

OR

- Explain voltage regulation methods of synchronous machines.
