Code: A-E337117-A	**I Semester Exam – 2022-23**	1 x 160
Std.: XI	Sub: ELECTRICAL MAINTENANCE - II	Marks: 40
Date: 23/11/2022	Roll No.: _____	Time: 2½ Hrs.

Q.1. Attempt any four: 04

a) The unit of magnetic flux is _____
i) Ampere ii) Volts iii) Weber

b) Those substances which are strongly attracted by a magnet are known as _____ substances.
i) ferromagnetic ii) paramagnetic iii) diamagnetic

c) _____ converts mechanical energy into electrical energy.
i) Generator ii) Motor

d) _____ generator is known as booster generator.
i) Series ii) Shunt iii) Compound

e) The value of back e.m.f. is always _____ the applied voltage.
i) less than ii) more than

f) The unit of Inductance is _____ .
i) Ampere ii) Henry iii) Volts

Q. 2. Attempt any three: 06

a) Define the magnetic terms;
i) Magnetic field, ii) Magnetic flux.

b) What is electromagnetism? State the advantages of electromagnets.

c) What is a D.C. generator? What are the essential requirements for producing electricity?

d) What is a D.C. motor? On what principle does it work?

e) Define the terms; i) Alternating current, ii) Frequency.

Q. 3. Attempt any three: 06

a) Define the terms with their units; i) m.m.f., ii) Reluctance.

b) On which principle does a D.C. generator works? Explain.

c) What are the types of armature windings? Distinguish them.

d) What is meant by 'back e.m.f'? What is its relation to the applied voltage?

e) The maximum value of an alternating induced e.m.f. is 500V. Find its instantaneous value at 30°, 90°, 270° and 330°.

Q. 4. Attempt any two: 06

a) State and explain Lenz's law with neat diagrams,

b) A four pole, wave wound armature has 500 conductors and a flux of 0.02 Wb per pole. Find the e.m.f induced in the armature when running at a speed of 800 r.p.m.

c) What are the different types of D.C. motors? Draw their connection diagram.

Q. 5. Attempt any two: 06

a) Classify the D.C. generators. Draw the circuit diagram of any two.

b) Why starter is necessary for starting D.C. motor?

c) A coil has the inductance of 0.14H is connected to a 220V, 50Hz supply. Find its inductive reactance.

Q. 6 Attempt any two: 12

a) A 250V shunt motor takes a total current of 25 A. If the resistance of the armature is 0.2Ω and that of shunt field is 200 Ω. Find: i) shunt field current, ii) armature current, iii) back e.m.f.

b) Draw a neat and labelled diagram of 3-point starter.

c) A coil of resistance 14 Ω and inductance of 0.28H is connected in series across a 250V, 50Hz A.C. supply. Find; i) impedance, ii) current, iii) power factor, iv) power of the circuit.