

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY — MARCH, 2015

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common for ME, AU and TD)

[Time : 3 hours

(Maximum marks : 100)

PART—A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Give any two applications of Lead acid battery.
2. Write the emf equation of a transformer.
3. Write the difference between auto transformer over two winding transformer.
4. Name two applications of dielectric heating.
5. Draw the logic symbol and truth table of NOR gate.

(5×2=10)

PART—B

(Maximum marks : 30)

II Answer *any five* of the following questions. Each question carries 6 marks.

1. Define efficiency of a battery.
2. Draw three points starter and mark necessary parts.
3. Explain the classification of transformer based on its function.
4. Find impedance, current and power factor of the following series circuit.
 $R = 10 \Omega$, $L = 50 \text{ mH}$, $C = 100\mu\text{F}$. Applied voltage is 200 V, 50 Hz.
5. Draw DOL starter and mark necessary parts.
6. Explain half wave rectifier with diagram.
7. Draw and briefly explain about UJT.

(5×6=30)

PART—C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT—I

- III (a) Describe the methods of charging of lead acid cell. 8
 (b) Explain the classification of DC motor based of field excitation. 7

OR

- IV (a) Explain the constructional details of DC generator. 8
 (b) List different types of DC motors and give two applications of each. 7

UNIT—II

- V (a) State and explain the working principle of a single phase transformer. 8
 (b) A 25 KVA transformer has 500 turns on the primary and 40 turns on the secondary winding. The primary is connected to 3000V, 50Hz mains. Calculate :
 (i) primary and secondary currents in full load ;
 (ii) secondary emf.
 (iii) maximum flux in the core. Neglect magnetic leakage, resistance of the winding and the primary no load current in relation to the full load current. 7

OR

- VI (a) Explain about generation of three phase emfs. 8
 (b) Explain about welding transformer. 7

UNIT—III

- VII (a) Explain the constructional details of three phase salient pole type alternator. 8
 (b) Explain the working principle of dynamo meter type wattmeter with diagram. 7

OR

- VIII (a) Explain the working of permanent magnet moving coil instrument. 8
 (b) Explain the working principle of fluorescent lamp with neat sketch. 7

UNIT—IV

- IX (a) Explain the output characteristics of common emitter NPN transistor. 8
 (b) State and explain the principle of oscillation. 7

OR

- X (a) Explain the working principle of SCR. 8
 (b) Explain AND and OR operation and give their logic symbols. 7