TED (10)–3038 Reg. No. .....

(REVISION—2010) Signature .....

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2013

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common for ME, AU & TD)

[*Time* : 3 hours

(Maximum marks : 100)

Marks

PART—A

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is meant by transformation ratio ?
2. Define phase sequence in a 3ϕ system.
3. What is % slip ?
4. Define power factor.
5. What is peak value ? (5×2=10)

PART—B

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

1. Derive the emf equation of a DC generator.
2. Draw the vector diagram of current and voltage of a pure inductor and capacitor.
3. A 3-phase, 4-pole Induction motor operates from a 50 Hz, 3ϕ supply. Calculate the motor speed at slip 0.03.
4. Describe the working of a full-wave bridge rectifier.
5. Explain the principle of oscillation.
6. Distinguish between core type and shell type transformer.
7. Describe the working of moving coil permanent magnet instrument. (5×6=30)

PART—C

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

UNIT – I

III (a) Explain the parts of a lead acid battery. 7

(b) Explain the constructional details of DC generator. 8

OR

IV (a) List the applications of lead acid batteries. 5

(b) Draw a 3-point DC motor starter and explain. 10

Marks

UNIT – II

V (a) Describe the working of auto transformer. 8

(b) Derive the emf equation of a transformer. 7

OR

VI (a) What are the common inter connections used in a 3-phase alternator? Explain. 8

(b) The maximum flux density in the core of a 250/3000 volts, 50 Hz single phase transformer is 1.2 wb/m^2. If the e.m.f. per turn is 8 volt:

Find (i) Primary and secondary turns

(ii) Area of core. 7

UNIT – III

VII (a) Describe the working of 'DOL' Starter. 10

(b) Define : (i) Primary instrument (ii) Secondary instrument. 5

OR

VIII (a) Explain star-delta starter with diagram. 10

(b) How a 3-phase induction motor works ? 5

UNIT – IV

IX (a) Sketch common base and common emitter configuration of NPN transistor. 8

(b) How P-type material is formed ? 7

OR

X (a) How N-type material is formed ? 7

(b) Explain voltage divider biasing. 8