TED (10)–3038

(REVISION—2010)

Reg. No. ....

Signature ....

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—MARCH, 2014

ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to AU, ME and TD)

[*Time* : 3 hours

(Maximum marks : 100)

PART—A

(Maximum marks : 10)

Marks

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

1.   Define Ampere hour rating of a lead acid battery.

2.   Write the equation for power in three phase ac star connected circuit.

3.   Draw a three phase delta connection.

4.   List any two applications of three phase squirrel cage induction motor.

5.   Draw a bridge rectifier circuit.   (5×2=10)

PART—B

(Maximum marks : 30)

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

1.   Explain construction of positive plate of the 24V, lead acid battery with a neat sketch.

2.   Describe the chemical reactions in a 12V lead acid cell during charging and discharging.

3.   Explain working of a single phase, core type, 230/110V, 3kVA, two winding transformer with a neat sketch.

4.   Draw internal wiring diagram of a direct on line starter.

5.   Explain the construction of a three phase squirrel cage induction motor.

6.   Discuss the biasing of a PNP transistor in Common Base active region with the sketch.

7.   Draw truth tables of :

   (i)   NOR gate   (iii)   NAND gate

   (ii)   Ex-OR gate   (5×6=30)

Marks

PART—C

(Maximum marks : 60)

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

UNIT—I

III (a) Write any two safety precautions to be observed while working with Lead acid battery. 2

   (b) Explain construction of a DC shunt generator. 6

   (c) Discuss any two methods of charging Lead acid battery. 7

OR

IV (a) State working principle of a dc motor. 2

   (b) Describe care and maintenance activities for a lead acid Battery. 6

   (c) Justify the usage of a three point starter with a DC Shunt motor by clearly stating the functions of starting resistors, no volt coil and over load trip. 7

UNIT—II

V (a) Draw three phase Star connection. 2

   (b) Explain working of a single phase welding transformer with a schematic diagram. 6

   (c) Compute the value of current i in a RLC ac circuit in which a 2 Ω resistor, a 0.05 henry inductance and a 100 micro farad capacitance are connected in series and fed with a supply of 100V at 50Hz. 7

OR

VI (a) Specify the relation between phase and line values of voltage and current in a three phase delta connection. 2

   (b) Explain working of an auto transformer with a neat diagram. 6

   (c) Compute the active power input to a delta connected three phase induction motor which takes a phase current of 5A when a line voltage of 415 V is applied. Power factor of the motor is 0.7. 7

UNIT—III

VII (a) State the basic principle of induction heating. 2

    (b) Explain the construction of an Arc furnace. 6

   (c) Demonstrate the working of a single phase, capacitor start induction motor with a neat diagram. 7

OR

VIII (a) Specify any two industrial applications of electric heating. 2

     (b) Differentiate Induction heating and Dielectric heating. 6

     (c) Explain working of a Moving coil ammeter with a neat sketch. 7

Marks

UNIT—IV

IX (a) Write any two industrial applications of an SCR. 2

(b) Describe a RC coupled Common Emitter amplifier with diagram. 6

(c) Demonstrate the working of an NPN transistor in the active region with a neat schematic Diagram. 7

OR

X (a) List any two configurations of transistors. 2

(b) Draw the truth table of the following logic circuit.

6
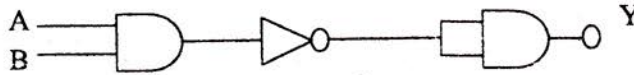
(c) Explain rectifier action of a centre tapped full wave rectifier with a neat circuit diagram. 7

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