TED (15) – 3043

(REVISION — 2015)

Reg. No.....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

ELECTRICAL TECHNOLOGY

[*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 time period.
2. Write voltage transformation ratio of a transformer.
3. How can limit Eddy Current Loss ?
4. Which starter is suitable for starting of a DC series motor.
5. List any two advantages of poly phase motor. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Derive the equation inipedance, power and power factor of RLC series circuit.
2. State and explain maximum power transfer theorem.
3. Explain the different types of losses in a transformer.
4. Classify DC generators based on its field excitation.
5. Derive the EMF equation of a DC generator.
6. Compare Single phase and three phase induction motor.
7. State the advantages of stationary armature in an alternator. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) A circuit having a resistance of 12 Ohms an inductance of 0.15 H and capacitance of 100 Micro Farads connected in series across a 100 V, 15 Hz supply. Calculate the impedance, current, power factor and power consumed. 8

(b) Draw and explain plate earthling. 7

OR

IV (a) Define the terms - Inductive reactance, Capacitive reactance, Impedance, Power Factor. 8

(b) An inductance of 0.03H is connected in series with a 4 Ohms resistance. Calculate impedance, current power factor when connected across 200V, 50 Hz Supply. 7

UNIT — II

V (a) Illustrate the on load working of a transformer. 8

(b) State and explain Kirchoff's Law. 7

OR

VI (a) A 25KVA single phase transformer has a 250 turns on the primary and 40 turns on the secondary winding. The primary is connected to 1500V, 50Hz mains. Calculate

(i) Primary & Secondary Current on full load

(ii) Secondary EMF

(iii) Maximum Flux in the core 8

(b) Explain the working of a auto transformer and list its advantages. 7

UNIT — III

VII (a) Explain the principal of operation of DC generator. 8

(b) Explain the necessity of starter in a DC motor starting. 7

OR

VIII (a) A 6 pole lap wound DC generator has 600 conductors on its armature. The flux per pole is 0.02 wb. Calculate

(i) The speed at which the generator must be run to generate 300 V.

(ii) What would be the speed if the generator were wave wound ? 8

(b) Draw and explain the characteristics of DC shunt motor. 7

UNIT — IV

IX (a) Explain the construction and working of a capacitor start induction run motor. 8

(b) To explain the relation between speed and frequency of an alternator. 7

OR

X (a) Derive the EMF equation of an alternator. 8

(b) Compare squirrel cage and slip-ring induction motor. 7