

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2022**

FUNDAMENTALS OF ELECTRICAL ENGINEERING

[Maximum marks: 75]

(Time: 3 Hours)

PART A

I. Answer all questions in one word or one sentence. Each question carries one mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	What is the unit of electric current?	M1.01	R
2	According to Ohm's law the potential difference across a conductor is to current flowing through it.	M1.02	R
3	The time taken by an alternating quantity for one complete cycle of wave is known as	M1.03	R
4	List any two types of single phase induction motor.	M2.03	R
5	Name the starter used to start a DC shunt motor	M2.04	R
6	List any two application of three phase induction motor	M2.02	R
7	Write the equation for transformation ratio of a transformer.	M3.01	R
8	The outer most electrons of an atom are called.....electrons.	M4.02	R
9	In a transistor collector-base region is always.....biased	M4.03	R

PART B

II. Answer any eight questions from the following. Each question carries three marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Derive the expression for equivalent resistance when three resistors R_1 , R_2 and R_3 are connected in series.	M1.01	A
2	Define the followings with respect to an alternating voltage (a)Rms value (b) Peak value	M1.03	U
3	State Ohms law and write its mathematical expression	M1.02	R
4	State the functions of the following in a DC Motor (1) Commutator (2) Carbon brush	M2.01	R
5	Explain the working of a single phase capacitor start induction motor.	M2.03	U
6	Explain the working of an autotransformer.	M3.02	U
7	Explain the principle of operation of induction heating	M3.03	U

8	Describe the construction of a single phase transformer	M3.01	U
9	Explain the working of a half wave rectifier	M4.02	U
10	Explain the working of BJT (Bipolar Junction Transistor)	M4.03	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	The magnetic flux linked with a coil having 250 turns is changed from 1.4 Wb to 2 Wb in 0.45 seconds. Calculate the induced emf in the coil.	M1.03	A
	OR		
IV	A small scale industry has the following load. Calculate the November month energy bill at the rate of Rs.4 per KWH. 1. 20W LED tube 10 numbers working 12 Hrs a day. 2. 80W fan 5 numbers working 8 Hrs a day. 3. 250W AC, 2 numbers working 6 Hrs a day.	M1.04	A
V	Explain the classification of DC motors based on field connection.	M2.01	U
	OR		
VI	Explain with neat sketch the construction and working of star delta starter.	M2.04	U
VII	Explain the construction of a three phase induction motor with neat sketch	M2.02	U
	OR		
VIII	Sketch the circuit diagram of DOL starter and explain its working.	M2.04	U
IX	Derive the emf equation of a transformer	M3.01	U
	OR		
X	Explain the working of an induction furnace.	M3.04	U
XI	Explain the working of centre tapped full wave rectifier with neat figure and input and output wave forms.	M4.02	U
	OR		
XII	With the help of a neat diagram, explain the working of a transistor as a switch.	M4.03	U
XIII	Explain the different elements of electric drives.	M4.04	U
	OR		
XIV	Draw and explain the operation of SCR	M4.03	U
