2110220152B

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

FUNDAMENTALS OF ELECTRICAL ENGINEERING

[Maximum marks: 75]   [Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	What is the unit of electric potential?	M1.01	R
2	Write the mathematical expression of Ohm's law.	M1.02	R
3	In an alternating quantity the number of cycles per second is known as ……….	M1.03	R
4	List any two application of dc motor.	M2.01	R
5	Name the starter used to start a DC series motor.	M2.04	R
6	Name the main parts of a single phase induction motor.	M2.03	R
7	A transformer works on the principle of ………	M3.01	R
8	Draw the symbol of a p-n junction diode.	M4.02	R
9	When transistors are used in amplifier circuits they usually operate in the ………. region?	M4.03	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.
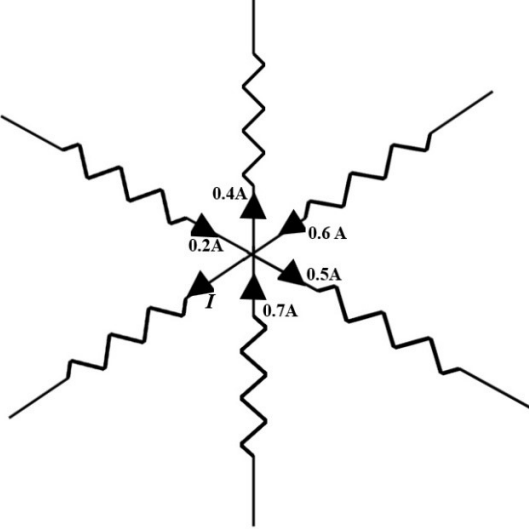
(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Find the value of equivalent resistance when two resistors of resistances 4Ω and 6Ω are connected in parallel.	M1.01	A
2	Define the following with respect to an alternating voltage. (a) Form factor (b) Peak factor	M1.03	U
3	Find the current flowing in a 20W, 220V lamp.	M1.04	A
4	Write the functions of the following parts in a three phase induction motor. (a) Staor (b) Rotor	M2.02	R
5	Explain the working of a DC series motor.	M2.01	U

6	List any three modes of heat transfer.	M3.03	U
7	Explain the principle of operation of arc furnace.	M3.04	U
8	A transformer has 500 turns on the primary winding and 40 turns on the secondary, find the transformation ratio and turns ratio of the transformer.	M3.01	A
9	Write any three active components used in electronics circuit.	M4.01	R
10	Draw the symbols of NPN and PNP transistors.	M4.03	U

PART C
Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	From the given circuit find the value of I.	M1.02	A

<center>**OR**</center>

		Module outcome	Cognitive level
IV	Estimate the electricity bill for the month of November for electricity consumption given as follows. (i) Six lamps of 25W working for 8 hrs a day. (ii) Four fans of 60W working for 8 hrs a day. (iii) One pump motor of 750W running for 1 hr a day. The tariff on electricity is Rs.3 per unit.	M1.04	A
V	With suitable sketch, describe the working principle of a DC motor.	M2.01	U

<center>**OR**</center>

		Module outcome	Cognitive level
VI	Explain the construction and working of a three point starter with neat sketch.	M2.04	U
VII	Explain the working of a single phase induction motor.	M2.03	U

<center>**OR**</center>

		Module outcome	Cognitive level
VIII	With the help of a neat diagram, Explain the working of star delta starter.	M2.04	U

IX	Explain with figure, the working of an autotransformer.	M3.02	U
	OR		
X	Explain about different heating methods of electric heating used for industrial applications.	M3.03	U
XI	Draw the circuit of a half wave rectifier circuit and explain its operation with waveforms.	M4.02	U
	OR		
XII	With the help of a neat diagram, explain the working principle of NPN transistor.	M4.03	U
XIII	Enlist the different type of capacitors and resistors used in electronic circuits.	M4.01	U
	OR		
XIV	Draw and explain the basic block diagram of EV charging system.	M4.04	U

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