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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2025

INDUSTRIAL ELECTRONICS AND DRIVES

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

PART-A

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

 $(9 \times 1 = 9 \text{ Marks})$

		Module Outcome	Cognitive level
1.	What is meant by doping in semiconductor?	M1.01	R
2.	Define Commutation in SCR.	M2.01	R
3.	What is back emf in DC motor?	M3.01	R
4.	Write down the equation of torque in DC motor.	M3.01	R
5.	What is the use of soft start in motors?	M3.04	R
6.	Why single phase induction motor is not self -starting?	M3.03	R
7.	What is the function of dual converter?	M4.01	R
8.	List any two applications of chopper.	M4.02	R
9.	Define electric drive.	M4.03	R

PART-B

II. Answer any 'eight' questions from the following. Each question carries 'three' marks. $(8 \times 3 = 24 \text{ Marks})$

Module Outcome Cognitive level

1.	Illustrate the difference between SCR and TRIAC.	M1.02	R
2.	Compare forward voltage triggering and gate triggering of SCR.	M2.01	U
3.	State Fleming's left-hand rule.	M3.01	R
4.	How the DC motors are classified based on the connection between the field winding and the armature?	M3.02	U
5.	Briefly explain the working of universal motor.	M3.03	U
6.	Write three applications of stepper motor.	M3.04	R
7.	List any three applications of cycloconverter.	M4.01	U
8.	Draw the circuit diagram of Jones chopper.	M4.02	R
9.	What is the purpose of step-down chopper?	M4.02	U
10.	List any three speed control methods of DC drives.	M4.03	R

 ${\bf PART-C} \\ {\bf Answer~'} {\it all''} \ {\bf questions~from~the~following.~Each~question~carries~'} {\it seven'~marks.} \\$

 $(6 \times 7 = 42 \text{ Marks})$

		Module Outcome	Cognitive level
III.	Draw and explain V-1 characteristics of power diode.	M1.01	U
	OR		
IV.	Describe different protection methods of SCR.	M1.04	U
V.	Define the terms:	M1.02	U
	i) Tum on time ii) Tum off time		
	iii) Gate current iv) Latching current		
	v) Holding current of an SCR.		
	OR		
VI.	Describe the structure and working of a DIAC.	M1.03	U
VII.	With neat circuit diagram, explain R triggering of an SCR.	M2.01	U
	OR		
VIII.	Construct SCR triggering circuit using UJT.	M2.01	U
IX.	Describe TRIAC light dimming circuit.	M2.03	U
	OR		
X.	Describe the operation of single phase full bridge inverter with neat	M2.03	U
	diagrams and waveform.		
XI.	Explain the working of a single phase induction motor.	M3.03	U
	OR		
XII.	Explain DC servo motor with diagram.	M3.04	U
XIII.	Explain the working principle of single-phase dual converter with	M4.01	U
	diagram.		
	OR		
XIV.	Compare AC and DC drives.	M4.04	U
