

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

First Semester

EE18153-ELECTRICAL MACHINES AND DRIVES

(Regulation 2018 & 2018A)

TIME: 3 HOURS

MAX. MARKS: 100

- CO1 To understand the basic concepts used in Electrical circuits and the principles of measuring instruments.
- CO2 To introduce the fundamentals of power semiconductor devices and its applications.
- CO3 To study the different types of electrical machines and its starting methods.
- CO4 To study basics of Industrial Electrical Drives.
- CO5 To impart knowledge of application of electrical drives using modern control strategy

PART- A (10x2=20Marks)
(Answer all Questions)

	CO	RBT LEVEL
1 State the Kirchoff's Voltage law.	1	1
2 Compare Moving coil and Moving Iron instruments.	1	4
3 Draw the characteristics curve of Zener diode.	2	1
4 Define pulse width modulation.	2	2
5 Write the applications of DC machines.	3	1
6 Why the starters are used in DC motors?	3	1
7 List the factors influences the electric drives.	4	2
8 Identify the safety measures taken in industries.	4	3
9 Define the Duty cycle.	5	2
10 How the speed of DC motor will vary with supply voltage?	5	1

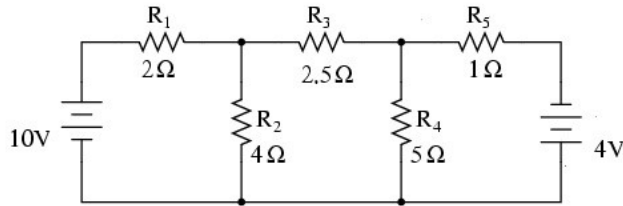
PART- B (5x 14=70Marks)

	Marks	CO	RBT LEVEL
11(a) Draw the diagram of series R-L circuit and derive an expression for reactance, impedance, current, voltage, phase angle and power factor of the circuit.	(14)	1	3

(OR)

11(b) Find the current flowing through R_3 resistance using nodal analysis method

(14) 1 3



12(a) Explain the working principle of Full wave rectifier with circuit diagram and waveforms. Derive the average and RMS value of output voltage.

(14) 2 2

(OR)

12(b) Explain the working principle of SCR and analyze its static and switching characteristics.

(14) 2 2

13(a) With neat diagram, explain the construction and working principle of DC motor.

(14) 3 4

(OR)

13(b) Explain the working principle of 3 phase induction motor and analyze the slip-torque characteristics.

(14) 3 4

14(a) Analyze in detail the factors influencing the choice of electrical drives.

(14) 4 4

(OR)

14(b) With neat sketch, explain various classes of duties for electrical drives and analyze its causes.

(14) 4 4

15(a) (i) With a neat diagram, explain chopper fed four quadrant DC drives and write its applications.

(7) 5 3

(ii) Compare conventional and solid state drive control of motors.

(7) 5 3

(OR)

15(b) (i) Compare AC voltage controls and Inverter with applications.

(7) 5 3

(ii) Explain in detail the modern Kramer's method of slip power recovery scheme and identify its applications.

(7) 5 3

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

16 Compare AC motor and DC motor drives and write its importance in industries.

Marks	CO	RBT LEVEL
(10)	5	5