



ARKA JAIN University
Jharkhand



END SEM EXAMINATION
School of Engineering & IT

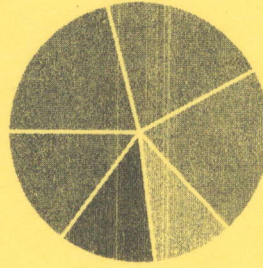
Branch	Electrical and Electronics Engineering	Program	Diploma
Subject Name	Electrical Testing and Commissioning	Semester	IV
		Year	June 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under Unfair Means and will Result in the Cancellation of the Paper(s). 		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)			
Q.N	QUESTIONS	Marks	COs
1			KL
i	What do you mean by electrical accident?	2	CO1 K2
ii	What is monitoring in electrical safety?	2	CO1 K3
iii	Write down the name of tools required for the installation work.	2	CO2 K2
iv	State safety precautions to be taken while unloading heavy equipment.	2	CO2 K5
v	What does a megger test measure?	2	CO3 K2
vi	What are the objectives of testing a machine?	2	CO3 K1
vii	What do you meant by trouble shooting?	2	CO4 K3
viii	How can visual inspection help in troubleshooting?	2	CO4 K3
ix	What do you mean by scheduled maintenance?	2	CO5 K1
x	Why maintenance of electrical machines are required?	2	CO6 K1

CO1	Remembering safety procedures with respect to earthing and insulation of electrical equipment.
CO2	Interpret the performance and specifications of electrical devices for testing and commissioning.
CO3	Apply proper tools, equipment, for installation, testing, maintenance of electrical machines, electrical devices and transformers.
CO4	Analyze the process to plan, control and implement commissioning of electrical equipment's, testing and commissioning of electrical equipment in accordance with IS codes.
CO5	Evaluate the corrective and preventive maintenance of electrical equipment's and Make plans for troubleshooting electrical machines and undertake regular preventive and breakdown maintenance.
CO6	Design and understand procedures for installation, testing and commissioning practices for various machine and devices.

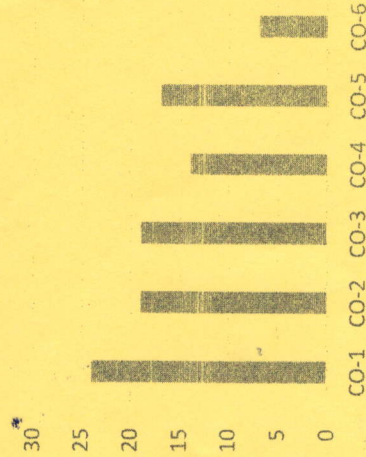
GRAFICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Write down the factors on which severity of Shock Depends.	05	CO1	K1
3	Explain briefly about the requirements of installation of pole mounted transformer.	05	CO2	K2
4	What are the mechanical tests to be carried out before commissioning a machine?	05	CO3	K6
5	Explain common troubles in D.C. machines.	05	CO6	K1
6	Describe briefly about the routine maintenance and what are the activities involved during routine maintenance?	05	CO5	K3
7	What are the precautions to be taken to avoid fire due to electrical reasons?	05	CO1	K2

Section C (Answer any THREE out of FIVE) – 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write down the Do's and don'ts regarding safety in domestic electrical appliances as well for substation/ power station operators.	10	CO1	K1
9	What are the factors are taken into account for the foundations of static electrical machinery?	10	CO2	K3
10	Write short notes on the following: (a) Routine tests (b) Type tests (c) Supplementary tests	10	CO3	K5
11	Describe briefly about the causes of electrical faults in electrical equipment.	10	CO4	K6
12	Describe briefly about the preventive maintenance and its benefits.	10	CO5	K4

ARKA JAIN University
Jharkhand

NAAC GRADE A
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END SEM EXAMINATION
School of Engineering & IT

Branch	Electrical and Electronics Engineering	Program	Diploma
Subject Name	Digital Electronics	Semester	IV
		Year	June 2024

Time: 3 Hour
Max. Marks : 70

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Three out of Five of Section C
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Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating
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Q. N I	QUESTIONS	Marks	COs	KL
i	What do you mean by hexadecimal number system? What is the base of hexadecimal number system?	2	CO1	K2
ii	Convert the given decimal number 125 to binary number system.	2	CO3	K1
iii	State DeMorgan's Theorem with proper examples.	2	CO1	K1
iv	What do you mean by Universal Gate?	2	CO1	K3
v	Convert 789 into 9s and 10s complement.	2	CO4	K1
vi	Give two properties of Boolean algebra along with mathematical expression.	2	CO2	K2
vii	What is sequential circuit?	2	CO2	K3
viii	Write an expression and diagram of Half adder.	2	CO3	K4
ix	What is SISO register?	2	CO1	K5
x	Write down the truth table of OR and NOR Logic Gates.	2	CO2	K4

Course Outcomes	KL- Knowledge Level, PO – Program Outcome
CO1	Identify the fundamental concepts and techniques used in digital electronics.
CO2	Understand and relate the various number systems and its application in logical and sequential circuit.
CO3	Apply the knowledge for solving problems related to number systems, Boolean algebra and to reduce Boolean expression using K Maps.
CO4	Analyse and distinguish the combinational and sequential circuits of digital electronics.
CO5	Evaluate the basic differences of combinational and sequential circuits, interpret flip flops as SR, JK, D flip flop. Prepare different conversion techniques from digital domain to Analog domain And vice versa.
CO6	Design various synchronous, asynchronous, sequential circuits and memory device.

GRAFICAL REPRESENTATION	
Bloom's level wise Marks Distribution	Course Outcome wise Marks Distribution
K1 K2 K3 K4 K5 K6	

Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
2	Add the binary number 1110 and 1010. Also verify the answer.	05	CO1	K2	
3	Mention all the Boolean Rules.	05	CO1	K1	
4	What is even parity generator? Design a 3 bit even parity generator with proper truth table and circuit diagram.	05	CO3	K5	
5	Design a 4:1 MUX along with circuit diagram.	05	CO5	K3	
6	What are the different classification of memory? Explain in brief.	05	CO4	K5	
7	What are the differences between combinational and sequential circuit?	05	CO3	K4	
Section C (Answer any THREE out of FIVE) - 30 Marks- (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
8	Simplify the following circuit using K Map: $f(A, B, C, D) = \sum m(0, 1, 2, 4, 5, 6, 10, 12, 14)$ and also design its circuit diagram.	10	CO5	K1	
9	Design a AND and OR Gate using NAND and NOR with proper circuit diagram.	10	CO6	K3	
10	What is counter? What are its types. Explain each with proper example and diagram.	10	CO2	K4	
11	Explain any two circuit of Analog to digital converter.	10	CO4	K2	
12	Design a 3-bit Synchronous counter using JK Flip Flop.	10	CO6	K6	



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Program	EEE & ME	Program	Diploma
Subject Name	Essences of Indian Knowledge & Tradition	Semester	IV
		Year	June 2024
Time: 1.5 Hour Max. Marks : 35	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Two out of Four of Section C Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u> 		

Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks			
Q. N 1	QUESTIONS	Marks	COs
i	Name the person who compiled all the Vedas.	01	CO1
ii	Name the famous Mantra associated with Rig Veda.	01	CO2
iii	How many sciences are there in Basic Structure of Indian Knowledge System?	01	CO1
iv	Is Culture a type of traditional Knowledge?	01	CO3
v	Give one Characteristic of Indian Knowledge System.	01	CO1
Section B (Answer any FIVE out of SIX) – 10 Marks (Each question Carry 02 Marks)			
Q. No.	QUESTIONS	Marks	COs
2	Explain Mimasa.	02	CO1
3	How many Vedas are there? Name them.	02	CO2
4	Write the objective of Ayurveda.	02	CO3
5	Give 1 difference between Veda and Upveda.	02	CO3
6	Who was Patanjali?	02	CO2
7	Give two reasons to protect Indian Knowledge System.	02	CO3

Section C (Answer any FOUR out of FIVE) - 20 Marks

(Each question Carry 05 Marks)

QUESTIONS

QUESTIONS	Marks	COs	KL
Write five basic senses.	05	CO1	KL1
Define the term Vyakaran.	05	CO2	KL2
What is AyurVeda? Name any four branches of AyurVeda.	05	CO1	KL5
Define the term Dharamshastra.	05	CO2	KL5
What is Purana? Write the name of any four Puranas.	05	CO3	KL3

Basic principles of thought process, reasoning and differencing. Introduction to the Indian Knowledge Systems, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care systems. Focus on Indian philosophical traditions, Indian linguistic tradition and Indian artistic tradition.

K1: Remembering
K2: Understanding
K3: Applying
K4: Analysing
K5: Evaluating
K6: Creating

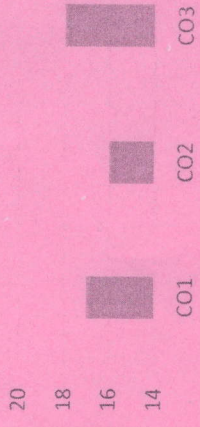
GRAFICAL REPRESENTATION

Level wise Distribution



KL4 ■ KL5 ■ KL6

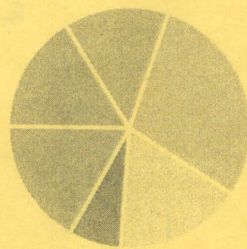
Course Outcome Wise Marks Distribution



CO1	Identify the various method of transmission and distribution of electrical power.
CO2	Understand the process of transmission and distribution of electrical power, also term like insulator, sag, corona, voltage regulation in transmission line.
CO3	Apply different method of distribution system to obtain performance characteristics.
CO4	Analyze the mechanical and electrical characteristics of transmission and distribution lines.
CO5	Evaluate the voltage drop, efficiency and voltage regulation of transmission line.
CO6	Design of transmission, distribution and underground cable line in context with voltage drop, efficiency, voltage regulation, etc.

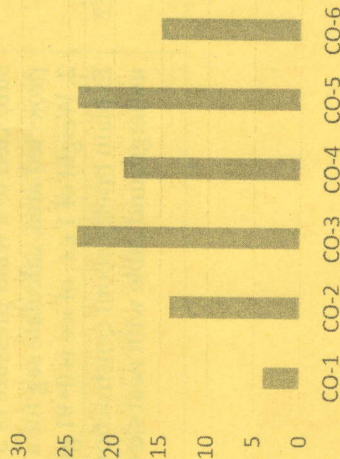
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



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Branch	Electrical and Electronics Engineering		Program	Diploma
Subject Name	Electric Power Transmission and Distribution		Semester	IV
			Year	June 2024

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Three out of Five of Section C
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Time: 3 Hour
Max. Marks :
70

Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating
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Section A (Each question Carry 02 Marks from Q1-i to xx) - 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Define power system.	2	CO1	K1	PO2
ii	What do mean by sag and enlist the types of sag in overhead line?	2	CO1	K3	PO1
iii	What do you mean by corona in power system?	2	CO2	K3	PO3
iv	Draw the phasor diagram of the medium transmission line (Nominal-T method).	2	CO2	K5	PO4
v	Define string efficiency and enlist the method used to improve string efficiency	2	CO3	K1	PO3
vi	What do you mean by distribution system?	2	CO3	K2	PO2
vii	The maximum demand on a power station is 500 MW. If the annual load factor is 60%, calculate the total energy generated in a year.	2	CO4	K1	PO4
viii	What do you mean by Load curve?	2	CO4	K2	PO4
ix	What do you mean by feeder and distributor.	2	CO5	K4	PO6
x	Enlist the type of underground cables.	2	CO5	K6	PO6


Section B (Answer any FOUR out of SIX) - 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain briefly about different types of insulators and its properties used in power system.	5	CO3	K3	PO1
3	Draw and explain briefly about single line diagram of power system.	5	CO3	K1	PO1
4	Write down the difference between EHVAC and HVDC transmission line system.	5	CO5	K4	PO4
5	A 3-phase transmission line is being supported by three-disc insulators. The potentials across top unit (i.e., near to the tower) and middle unit are 8 kV and 11 kV respectively. Calculate (i) the ratio of capacitance between pin and earth to the self-capacitance of each unit (ii) the line voltage and (iii) string efficiency.	5	CO5	K5	PO2
6	A 2-wire d.c. distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A, and 50A situated 500 m, 1000 m, 1600 m, and 2000 m from the feeding point A. Each conductor has a resistance of 0.02Ω per 1000 m. Calculate the p.d. at each load point if a p.d. of 400 V is maintained at point A.	5	CO6	K1	PO5
7	Explain briefly about different cable laying methods of underground cable.	5	CO4	K6	PO6


Section C (Answer any THREE out of FIVE) - 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain briefly about advantage of High voltage Transmission.	10	CO3	K3	PO1
9	A 3-phase, 50-Hz overhead transmission line 100 km long has the following constants: Resistance/km/phase = 0.1Ω Inductive reactance/km/phase = 0.2Ω Capacitive susceptance/km/phase = 0.04×10^{-4} siemen Determine (i) the sending end current (ii) sending end voltage (iii) sending end power factor and	10	CO2	K4	PO4

10	(iv) transmission efficiency when supplying a balanced load of 10,000 kW at 66 kV, p.f. 0.8 lagging. Use nominal T method. A 3-phase transmission line is being supported by three disc insulators. The potentials across top unit (i.e., near to the tower) and middle unit are 8 kV and 11 kV respectively. Calculate (i) the ratio of capacitance between pin and earth to the self-capacitance of each unit (ii) the line voltage and (iii) string efficiency.	10	CO5	K2	PO4
11	A transmission line has a span of 275 m between level supports. The conductor has an effective diameter of 1.96 cm and weighs 0.865 kg/m. Its ultimate strength is 8060 kg. If the conductor has ice coating of radial thickness 1.27 cm and is subjected to a wind pressure of 3.9 gm/cm^2 of projected area, calculate sag for a safety factor of 2. Weight of 1 c.c. of ice is 0.91 gm .	10	CO6	K3	PO5
12	Explain briefly about construction of underground cable with neat sketch	10	CO4	K6	PO6



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Branch	Electrical & Electronics Engineering	Program	Diploma
Subject Name	Industrial, Synchronous and Special Electric Machines	Semester	IV
		Year	June 2024

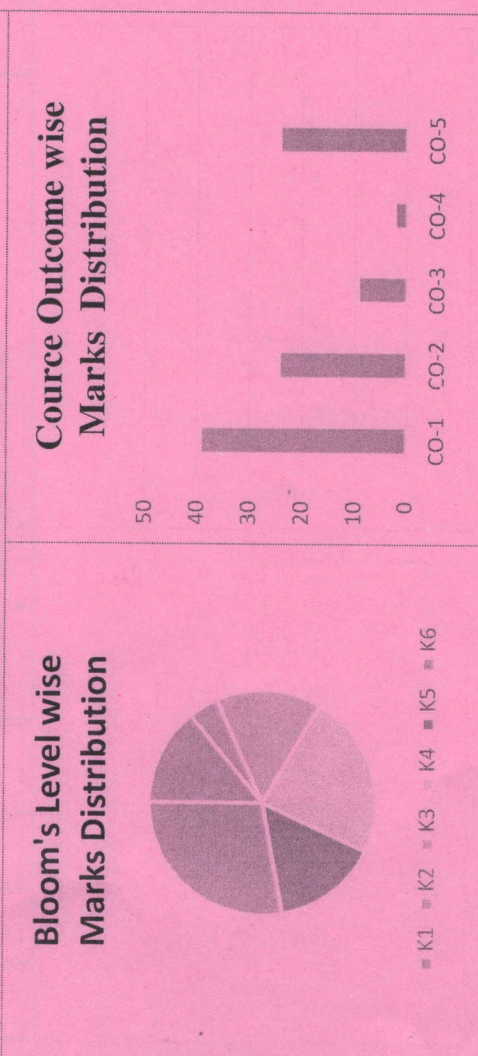
Time: 3 Hour
Max. Marks : 70

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Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating
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CO- Course Outcomes,	KL- Knowledge Level,	PO - Program Outcome
CO1	Recognize different electrical machine.	
CO2	Understand the operation of ac machines.	
CO3	Apply the concepts of rotating magnetic fields to find characteristics of Induction motor.	
CO4	Ability to conduct experiments on Ac Machines to find the Characteristics	
CO5	Evaluate performance characteristics of ac machines	



Section A (Each question Carry 02 Marks from Q1-i to x) -20 Marks

Q. N	QUESTIONS	Marks	COs	KL	PO
i	Find the slip of a three phase, 4 pole, 50 Hz induction motor Runs at 750 rpm.	2	CO1	K2	PO2
ii	What are the advantages of slightly parallel rotor slot in squirrel cage induction motor?	2	CO2	K1	PO3
iii	Define winding factor	2	CO5	K4	PO4
iv	Write two advantages of squirrel cage induction motor	2	CO2	K1	PO3
v	What is hunting and write down its effect.	2	CO1	K4	PO2
vi	Calculate the distribution factor for 36 slots, 4 pole, single-layer three phase winding.	2	CO3	K3	PO1
vii	Write down two application of synchronous motor.	2	CO3	K1	PO3
viii	Why synchronous motor is not self-starting	2	CO3	K2	PO4
ix	A 4 pole, 3 phase, 50 Hz induction motor runs at a speed of 1470 r.p.m. speed. Find the frequency of the induced e.m.f in the rotor under this condition	2	CO5	K5	PO2
x	Why rotating field are more prefer over rotating armature in synchronous generator?	2	CO4	K1	PO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Derive torque equation of Induction motor.	5	CO1	K2	PO5
3	A three phase 16-pole alternator has a star connected winding with 144 slots and 10 conductors per slot. The flux per pole is 0.03wb, sinusoidally distributed and the speed is 375rpm. Find frequency, line and phase e.m.f. assume full – pitched coil.	5	CO3	K3	PO3
4	Distinguish between salient pole and non-salient pole rotor	5	CO2	K4	PO1
5	A 2300-V, 3-phase, star connected synchronous motor has a resistance 0.2 ohm per phase and synchronous reactance of 2.2 ohm per phase. The motor is operating at 0.5 power factor leading with a line current of 200A. Determine the value of generated e.m.f. per phase.	5	CO5	K4	PO4
6	A three phase 400/200-V, Y-Y connected wound rotor induction motor has 0.06 ohm rotor resistance and 0.3 ohm standstill reactance per phase. Find the additional resistance required in the rotor circuit to make the starting torque equal to the maximum torque of the motor	5	CO2	K5	PO5
7	Explain effect of change in excitation on constant load of a synchronous motor.	5	CO5	K5	PO2

Section C (Answer any TWO out of FOUR) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain any two method of speed control of induction motor.	10	CO5	K4	PO4
9	The power input to the rotor of 550 V, 50 Hz, 6-pole, 3-phase, induction motor running at 975rpm is 40 kW. The stator losses are 1kW and friction and windage losses total 2 Kw. Calculate (i) the slip, (ii) rotor copper losses (iii) efficiency.	10	CO1	K5	PO2

10	A three phase, star connected alternator supplies a load of 10MW at p.f. of 0.85 lagging and at 11 kV (terminal voltage). Its resistance is 0.1 ohm per phase and synchronous reactance 0.66 ohm per phase. Calculate the line value of e.m.f. generated.	10	CO1	K5	PO4
11	Define voltage regulation? Explain briefly synchronous impedance method.	10	CO2	K4	PO2
12	Explain method of starting of Synchronous Motor	10	CO1	K5	PO3



Branch	Electrical and Electronics Engineering	Program	Diploma
Subject Name	Industrial Drives	Semester	IV
		Year	June 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to Q1-xx) – 20 Marks

Q. No.	QUESTIONS	Marks	COs	KL	PO
1					
i	What is an electrical drive?	2	CO1	K1	PO2
ii	What is group drive?	2	CO1	K2	PO1
iii	Why individual drive is preferred over group drive?	2	CO2	K1	PO3
iv	Why should a dc motor not be run without load?	2	CO2	K2	PO2
v	Which part of a motor needs maximum attention for maintenance?	2	CO2	K1	PO4
vi	Identify the rule which is used to determine the direction of rotation of D.C motor?	2	CO2	K1	PO2
vii	What is stepper motor?	2	CO6	K2	PO5
viii	Which method we must adopt to control the speed of a dc shunt motor above the base speed?	2	CO3	K2	PO6
ix	Recall the metal by which Slip rings are usually made of?	2	CO2	K1	PO12
x	List the four quadrant operation of electric drives system.	2	CO2	K1	PO11

Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Compare semi converter drives and full converter drives	5	CO3	K5	PO3
3	Define braking? What are the types of braking in DC motor drive?	5	CO3	K1	PO2
4	What are the common maintenance of AC single phase motor?	5	CO3	K5	PO12
5	Explain the construction and operation of single phase SCR drive half wave converter with its wave diagram?	5	CO4	K5	PO1
6	Compare between group drive and individual drive.	5	CO2	K2	PO2
7	What are the procedures to maintenance of battery?	5	CO2	K1	PO1

Section C (Answer any THREE out of FIVE) - 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Write the process to control stepper motor with 8051 microcontroller?	10	CO6	K5	PO2
9	Write down the construction of shaded pole induction motor with diagram. What are the advantages, disadvantages and application of this motor?	10	CO2	K5	PO1
10	Explain regenerative braking applied to three phase induction motor.	10	CO3	K6	PO2
11	List the characteristic required for drives used at different stage of paper making process and suggested suitable motors.	10	CO5	K5	PO1 PO12
12	Write short note on - i). PMDC motor ii). DC Servo motor	10	CO2	K6	PO2 PO3

CO- Course Outcomes, KL- Knowledge Level, PO - Program Outcome

Course Outcomes	CO1
	Study the various applications in industrial and domestic areas are essential.
	Classify types of electric motor drives systems based on nature of loads, control objectives, performance and reliability.
	Apply various converter to control the speed of the drives.
	Analyze the performance of AC and DC drives under different conditions.
	Evaluate the advantages and choice of electric drive and justify a suitable electrical drive for specific application in the industry.
	Design the speed control and current control loops using Microcontroller for a industrial drive.

GRAFICAL REPRESENTATION

Bloom's wise Marks Distribution



Course Outcome Wise Marks Distribution

