

 ARKA JAIN University Jharkhand				[30-06-2025] END SEM EXAMINATION School of Engineering & IT	
Branch	Electrical and Electronics Engineering			Program	Diploma
Subject Name	Electrical Testing and Commissioning			Session	Even, 2024-2025
Semester	IV			Year	June, 2025
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 • Possession of <u>Mobile Phone</u> or any kind of Written Material, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u> .					
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	KL	
1					
i	Which instrument is used to measure insulation resistance?	2	CO1	K1	
ii	What is the role of a fire detection alarm in substations?	2	CO2	K2	
iii	Define the term "foundation" in the context of machinery installation.	2	CO1	K1	
iv	Name two tools used for leveling and aligning machinery.	2	CO2	K2	
v	What do you mean by testing and commissioning in electrical machines.	2	CO6	K1	
vi	Mention the role of Indian Standard Specifications (ISS) in electrical testing.	2	CO4	K2	
vii	Define troubleshooting in electrical machines.	2	CO5	K1	
viii	Name the tools used for troubleshooting electrical machines.	2	CO5	K2	
ix	Define maintenance in electrical machines.	2	CO5	K1	
x	Mention the factors affecting preventive maintenance schedules.	2	CO5	K2	

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Analyze the factors affecting the severity of an electrical shock and how they can be mitigated.	05	CO2	K4
3	Illustrate how would you unload a heavy transformer safely using lifting equipment?	05	CO4	K3
4	Describe the different types of electrical tests: a) Routine tests b) Type tests c) Supplementary tests	05	CO6	K5
5	Explain the various causes of failure in electrical machines and their effects.	05	CO2	K4
6	Demonstrate the breakdown maintenance and what are the activities are performed during breakdown maintenance.	05	CO5	K3
7	Evaluate the role of training programs in enhancing electrical safety awareness for operators.	05	CO3	K5

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Develop a comprehensive checklist of Do's and Don'ts for power station operators to ensure safety.	10	CO3	K6
9	Discuss the concept of foundation and its significance in installing rotating electrical machinery.	10	CO3	K5
10	Demonstrate a step-by-step method for conducting mechanical tests before commissioning an electrical machine.	10	CO6	K5
11	Describe the causes of electrical faults in electrical equipment.	10	CO6	K4
12	Discuss about the periodic maintenance and what are the activities are performed during periodic maintenance.	10	CO5	K6

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

Course Outcomes	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.

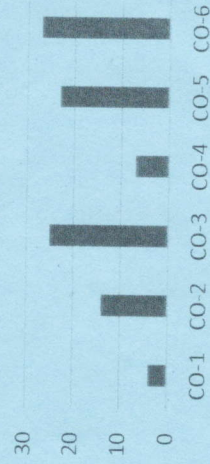
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



		ARKA JAIN University Jharkhand				[26-06-2025] END SEM EXAMINATION School of Engineering & IT		
Program	Electrical and Electronics Engineering						Branch	Diploma
Subject Name	Digital Electronics						Session	Even, 2024-2025
Semester	IV						Year	June, 2025
• 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 • Graf Paper / Drawing Sheet/ Log Book/ Ledger (please Mention if any) • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes 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	
Time: 3 Hour Max. Marks : 70								

Time: 3 Hour
Max. Marks : 70

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N	QUESTIONS		Marks	COs	KL
1					
i	Implement the Boolean function $F = AB + C'$ using logic gates.		2	CO3	KL3
ii	Convert the hexadecimal number $A3F_{16}$ to binary.		2	CO2	KL1
iii	Explain how many select lines are needed for an 8:1 MUX?		2	CO4	KL5
iv	How many flip-flops are needed for a Mod-10 counter?		2	CO5	KL2
v	Differentiate between a full adder and a half adder.		2	CO4	KL4
vi	Explain is flash memory?		2	CO6	KL5
vii	Draw the logic symbol and truth table for a XOR gate.		2	CO1	KL3
viii	What is a ring counter?		2	CO6	KL1
ix	Elaborate the difference between combinational and sequential circuits.		2	CO5	KL4
x	What is the 2's complement of 10101010_2 ?		2	CO2	KL3

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	State and prove De Morgan's theorems.	05	CO3	KL1
3	Explain the working of a 4:1 multiplexer with a block diagram, truth table and logic diagram.	05	CO4	KL2
4	Compare SRAM and DRAM in terms of speed, cost, and applications.	05	CO6	KL5
5	Solve the Boolean expression using K-map: $F(A,B,C) = \sum(0,1,2,4,5,6)$.	05	CO3	KL3
6	What is triggering and list different types of triggering in digital electronics.	05	CO5	KL4
7	What is a counter? Explain two types of counters.	05	CO5	KL5

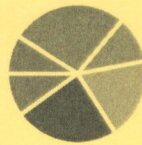
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write short notes and explain: (a) Full Subtractor (b) Full Adder (c) 1-4 DEMUX (d) Decoder	10	CO3 & CO4	KL2
9	Describe the construction and operation of JK, and JK Master-Slave (MS) flip-flops using NAND gates. For each flip-flop, provide the logic diagram, truth table, and characteristic equation. Explain the key working principles and how the flip-flop responds to different input conditions.	10	CO5	KL6
10	Explain the working of a Johnson counter with a timing diagram.	10	CO6	KL2
11	Explain different number systems (binary, octal, decimal, hexadecimal) with conversion methods and examples.	10	CO2	KL5
12	Define memory in the context of digital systems. Discuss the working principles, key characteristics, and typical applications of various types of ROM and compare them.	10	CO6	KL4

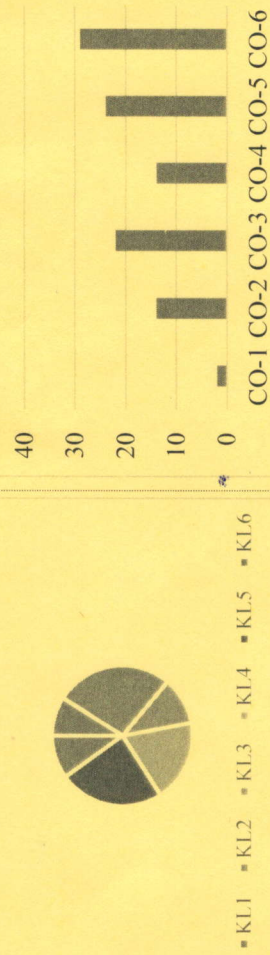
CO1	Identify the fundamental concepts and techniques used in digital electronics.
CO2	Understand and relate the various number systems and its application in logical and sequential circuit.
CO3	Applying the knowledge for solving problems related to number systems, Boolean algebra and to reduce Boolean expression using K Maps.
CO4	Analyze 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,J,K,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.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		[24-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Electrical and Electronics Engineering			Branch	Diploma
Subject Name	Electric Power Transmission and Distribution			Session	Even, 2024-2025
Semester	IV			Year	June 2025
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 - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation</u> of the <u>Paper(s)</u>.					
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	KL
1				
i	Define the term Transmission Line.	2	CO1	K2
ii	Define the term corona effect in the context of transmission lines.	2	CO2	K1
iii	State the effect of power factor on the efficiency of a transmission line.	2	CO2	K2
iv	What is meant by Flexible AC Transmission System (FACTS)?	2	CO3	K1
v	State two advantages of using a ring distribution system.	2	CO1	K2
vi	List two advantages of HVDC transmission lines.	2	CO3	K1
vii	Define an AC distribution system.	2	CO4	K2
viii	List three types of line insulators used in transmission and distribution lines.	2	CO4	K2
ix	What is the purpose of string efficiency in the context of suspension insulators?	2	CO3	K1
x	Differentiate between primary and secondary distribution.	2	CO4	K2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Name and explain the applications of different types of line insulators.	05	CO4	K4
3	An underground cable has a resistance of $0.2 \Omega/\text{m}$ and carries 150 A over a length of 2km. Calculate power loss.	05	CO6	K3
4	How is the transmission efficiency of a single-phase short transmission line determined?	05	CO1	K3
5	Analyze the advantages and disadvantages of using 220 kV and 400 kV transmission lines for long-distance power transmission.	05	CO5	K4
6	A 220 kV transmission line has a resistance of 0.4 ohms per kilometre. Calculate the voltage drop over a 150km distance if the current is 250 A.	05	CO4	K5
7	Explain the classification of transmission lines based on the following criteria: 1. Type of voltage 2. Length	05	CO2	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Draw and explain the layout of a radial distribution system. What are the advantages of a ring main distribution system?	10	CO4	K4
9	A 132 KV transmission line has the following data wt. of the conductor=680kg/km, length of span=260 m, Ultimate strength=3100kg Safety factor=2, Calculate the height above ground at which the conductor should be supported. Ground clear required is 10 metres.	10	CO6	K5
10	Define string efficiency. Derive an expression for the string efficiency of a string of three suspension insulators.	10	CO3	K5
11	A transformer operates with an input voltage of 33 kV and an output voltage of 220 kV. If the input power is 150 MW and the transformer efficiency is 98%, calculate the output power.	10	CO5	K6
12	Draw the Single line diagram with the components of an electric supply transmission and distribution system and discuss.	10	CO1	K6

CO- Course Outcomes,

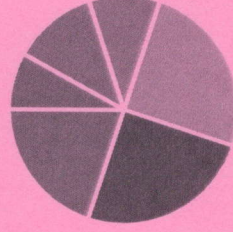
KL- Knowledge Level,

PO – Program Outcome

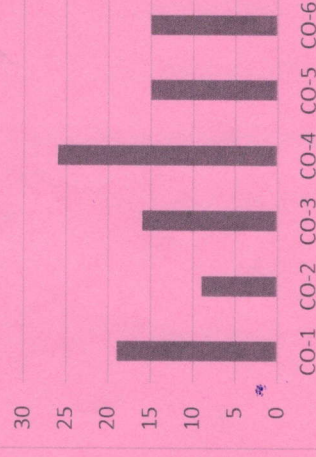
Course Outcomes	CO1	Identify the various method of transmission and distribution of electrical power.
	CO2	Understand the process of transmission and distribution of electrical power, also term like insulator, sag, corona, voltage regulation in transmission line.
	CO3	Apply different method of distribution 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 transmission and distribution line in context with voltage drop, efficiency, voltage regulation, sag, corona etc.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Source Outcome wise Marks Distribution



		 ARKA JAIN University Jharkhand		 NAAC GRADE ACCREDITED UNIVERSITY		[02-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program		Electrical and Electronics Engineering				Branch	Diploma
Subject Name		Induction, Synchronous and Special Electric Machines				Session	Even, 2024-25
Semester		IV				Year	June, 2025*
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • 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 <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</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 x – 20 Marks)				
Q.N	QUESTIONS	Marks	COs	KL
i	What do you mean by Slip?	2	CO1	K1
ii	What is Fractional Horse Power (FHP) Motors?	2	CO1	K2
iii	Write the applications of synchronous motor.	2	CO2	K1
iv	What is basic principle of operation of alternators?	2	CO2	K2
v	What are types of 3- phase induction motor?	2	CO3	K1
vi	State any four uses of single-phase induction motor?	2	CO3	K2
vii	In which direction a shaded pole motor runs?	2	CO4	K2
viii	State Lenz's law?	2	CO5	K3
ix	Write down the applications of BLDC motors.	2	CO5	K1
x	What are the advantages of 3-phase induction motor?	2	CO5	K2

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

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the working principle of three phase synchronous motor.	05	CO1	K4
3	Write down the Difference between "capacitor start" & "Capacitor start capacitor run" single phase induction motor?	05	CO2	K6
4	Explain briefly about the construction and working principle of Reluctance motor.	05	CO3	K3
5	Write down the comparison between Resistance split-phase type and capacitor start type induction run type single phase induction motor.	05	CO4	K2
6	Derive the condition for maximum torque of 3-phase induction motor.	05	CO5	K5
7	A 3-phase, 4-pole, 50 Hz induction motor works with a full load slip of 3 %. Find: (i) Synchronous speed (ii) Actual speed of the motor	05	CO1	K5

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

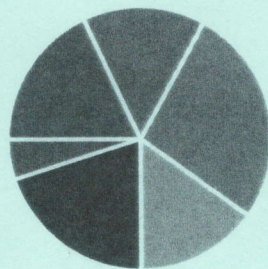
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write down the difference between synchronous motor and induction motor.	10	CO1	K1
9	Describe briefly about the operating principle of a three-phase induction motor.	10	CO2	K3
10	Write short notes on the followings: (a) Maintenance of alternators (b) Armature reaction in Alternators	10	CO3	K4
11	Explain the principle of working of a single-phase induction motor with the help of double revolving field theory.	10	CO4	K3
12	The full load power input to 4 pole, 50 Hz three phase induction motor is 50 kW, running at 1440 r.p.m. Calculate its full load efficiency if stator losses are 1000 W and frictional losses are 650 W.	10	CO5	K5

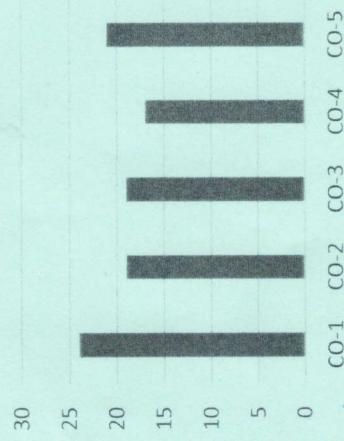
CO1	Define the constructional details and principle of operation of synchronous machine, induction motors & fractional horse power motor.
CO2	Describe working and equivalent circuit and phasor diagram of synchronous machine and induction machine and there classification.
CO3	Developed basic knowledge to determine the parameters of various machine.
CO4	Analyze the Starting, Breaking and speed control of three phase induction motor.
CO5	Conclude the voltage regulation of alternator, and performance of various motors.
CO6	Construct winding of various machine (stator and rotor), dimension & can assemble there parts.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

	ARKA JAIN University Jharkhand				[04-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Electrical and Electronics Engineering			Branch	Diploma	
Subject Name	Industrial Drive			Session	Even, 2024-2025	
Semester	IV			Year	June, 2025	
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page * • <u>Backside</u> • 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 <u>Written Material</u>, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</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 x – 20 Marks)						
Q. N	QUESTIONS		Marks	COs	KL	
1						
i	What is electrical drives?		2	CO1	K1	
ii	Which part of a motor needs maximum attention for maintenance?		2	CO1	K1	
iii	List the name of components of Electrical Drives.		2	CO1	K2	
iv	List the various methods of control the speed of AC drive.		2	CO2	K2	
v	What are the advantages of electrical drive over mechanical drive?		2	CO2	K2	
vi	Explain why a DC motor should not be run without load.		2	CO2	K3	
vii	Explain the plugging braking.		2	CO3	K3	
viii	Define the term motor rating.		2	CO3	K3	
ix	Compare between DC series and DC shunt motor.		2	CO2	K4	
x	List two advantages of full wave converter drive.		2	CO4	K2	

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	List the different applications of Electric Drive.	05	CO1	K2
3	Compare between group drive and individual drive.	05	CO1	K4
4	Discuss the construction and principle of operation of DC series motor.	05	CO2	K4
5	List the common maintenance steps of AC single phase motor.	05	CO3	K2
6	Explain Dynamic braking.	05	CO3	K4
7	A 220 V DC shunt motor has an armature resistance of 0.5Ω and is running at 1000 rpm, taking an armature current of 30 A. If the motor is suddenly disconnected from supply and connected across a braking resistor of 2.5Ω , calculate the initial braking torque.	05	CO4	K6

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

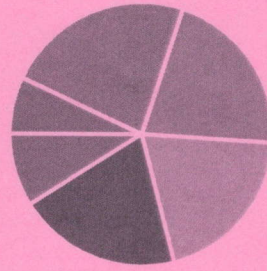
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain electric drives? Draw the block diagram and define each block in details.	10	CO1	K3
9	List the characteristic required for drives used at different stage of paper making process and suggested suitable motors and its drive.	10	CO5	K4
10	Write short note on – i. PMDC Motor. ii. Capacitor run motor.	10	CO2	K5
11	Write the process to control stepper motor with 8051 microcontroller?	10	CO6	K5
12	A 3-phase, 400 V, 50 Hz squirrel cage induction motor drives a load whose torque varies as the square of the speed. The motor runs at full load with a speed of 1440 rpm. The full-load torque is 120 Nm. Calculate a. The motor slip at full load. b. The load torque at 1200 rpm. c. The input power to the motor at full load, assuming an efficiency of 90%.	10	CO5	K6

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

CO1	Observe speed/ torque characteristics of common drive motor and recognize behavior of electric motor during starting, running, and breaking.
CO2	Describe about the various control techniques employed to controlling the drives for ac and dc motors.
CO3	Apply various converter to control the speed of the drives.
CO4	Analyze the performance of AC and DC drives under different conditions.
CO5	Evaluate the advantages and choice of electric drive and justify a suitable electrical drive for specific application in the industry.
CO6	Design the speed control and current control loops for industrial drive.

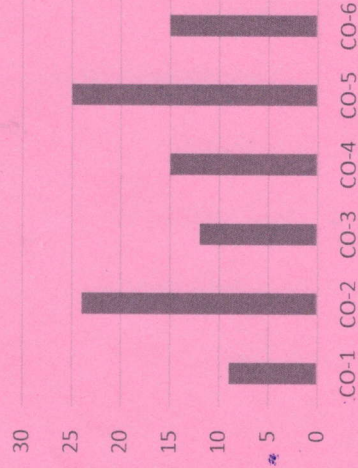
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



 ARKA JAIN University Jharkhand				[21-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	ME/EEE	Branch	Diploma		
Subject Name	Essence Of Indian Knowledge Tradition	Session	Even, 2024-2025		
Semester	IV	Year	June, 2025		
Time: 1.5 Hour Max. Marks : 35		• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Five out of Six of Section B • Answer Any Two out of Four of Section C • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation</u> of the <u>Papers</u> .			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating		

Section A (Each question Carry 01 Marks from Q1-i to v) - 05 Marks					
Q.N	QUESTIONS	Marks	COs	KL	
1					
i	List down the number of branches that are there in IKS.	01	CO1	KL1	
ii	Name the financial head of Indian Government.	01	CO2	KL4	
iii	State how many hymns were there in Rig Veda?	01	CO1	KL2	
iv	Sama Veda is a _____ text.	01	CO3	KL5	
v	Who introduced the first aircraft.	01	CO1	KL3	
Section B (Answer any FIVE out of SIX) - 10 Marks (Each question Carry 02 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
2	List down the 2 full forms IKS.	02	CO1	KL2	
3	Mention all the 4 castes.	02	CO2	KL1	
4	Name the 4 natural god.	02	CO3	KL3	
5	Yajur Veda is known as the Veda of _____ & _____.	02	CO3	KL2	

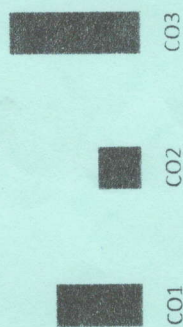
CO1	Basic principles of thought process, reasoning and differencing.
CO2	Introduction to the Indian Knowledge Systems, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care systems.
CO3	Focus on Indian philosophical traditions, Indian linguistic tradition and Indian artistic tradition.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



Q. No.	QUESTIONS	Marks	COs	KL
6	Name the Indian Musical Rag.	02	CO2	KL5
7	State the other 2 names of Ashtadashvidya.	02	CO3	KL4
Section C (Answer any TWO out of FOUR) – 20Marks (Each question Carry 10 Marks)				
8	Illustrate the key aspect of IKS.	10	CO2	KL2
9	Name the following heads: a. Political head of country b. Economical head of country c. Financial head of country d. Educational head of country e. Agricultural head of country	10	CO1	KL5
10	Explain all the 3 laws of Newton.	10	CO2	KL5
11	Portray your personal views based on your experience 'Has Science Developed'.	10	CO3	KL3