



ARKA JAIN
University
Jharkhand



124-06-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	Mechanical Engineering	Branch	Diploma
Subject Name	Computer Integrated Manufacturing	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 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	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

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

Q.N	QUESTIONS	Marks	COs	KL	PO
1					
i	Write a full form of CAE, CIM, CAPP & CAD.	2	CO1	K1	PO2
ii	Write down any four basic components of a CIM.	2	CO2	K2	PO1
iii	What is industrial robot? What are the objectives of using Industrial robots?	2	CO3	K1	PO2
iv	Why CAD & CAM software's require in designing.	2	CO3	K2	PO3
v	Enlist some basic G and M code of CNC.	2	CO1	K1	PO4
vi	Enlist the role of computer in manufacturing	2	CO3	K1	PO4
vii	Write down the stages in Design Process	2	CO5	K1	PO3
viii	Enlist hardware in CAD.	2	CO1	K4	PO1
ix	What is Group Technology?	2	CO5	K2	PO2
x	How CIM affects in production and in quality?	2	CO1	K1	PO1

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Discuss problem identification in design process	5	CO1	K1	PO2
3	Explain geometrical modelling in design process	5	CO5	K5	PO3
4	Write a short note on Engineering Analysis and optimization.	5	CO5	K5	PO2
5	How Computer aided inspection planning is more effective than manual inspection planning Discuss in brief.	5	CO1	K2	PO2
6	What is Flexible manufacturing system (FMS) and write down its advantages	5	CO3	K2	PO3
7	Elaborate computer networks for manufacturing	5	CO2	K4	PO3

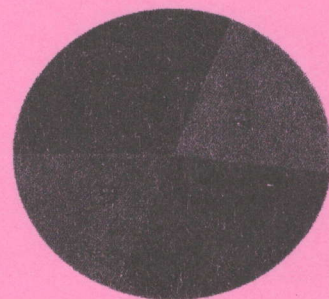
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Define process planning? Enlist the procedure of process planning also discuss the advantages of Computer Aided Process Planning (CAPP)?	10	CO1	K4	PO3
9	How we can control the quality of production using computer aided software? Explain.	10	CO5	K5	PO4
10	Why there is need of automation in Manufacturing? What are different types of automation? Discuss in brief.	10	CO3	K3	PO3
11	Elaborate working of industrial robot? What are the objectives of using Industrial robots in manufacturing?	10	CO4	K2	PO2
12	Discuss in brief importance of Flexible Manufacturing system (FMS) also explain the various types and the benefits of FMS.	10	CO4	K1	PO3

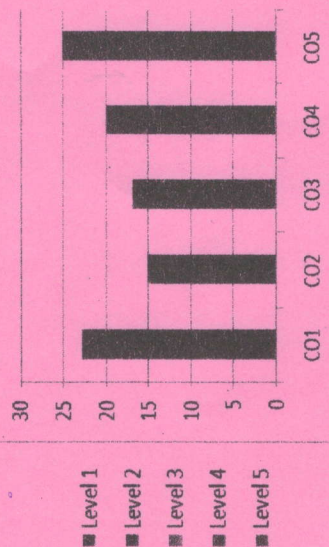
CO1	Understand basic components and networks involved in CIM.
CO2	Understand hardware, software and product modelling at industry level
CO3	Understand process planning and program coding of task.
CO4	Devise a manufacturing cell and cellular manufacturing system.
CO5	Design automated material handling and storage systems for a typical production system.

GRAPHICAL REPRESENTATION

Bloom's Level Wise Mark Distribution



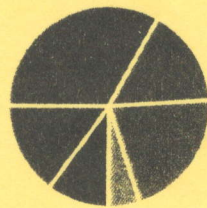
Course Outcome Wise Mark Distribution



CO1	Recognize different modes of heat transfer.
CO2	Understand the concepts of Convection and radiation.
CO3	Apply fins and insulation under suitable conditions.
CO4	Analyze non-dimensional numbers for different situations.
CO5	Evaluate the heat exchangers on basis of NTU and LMTD method.

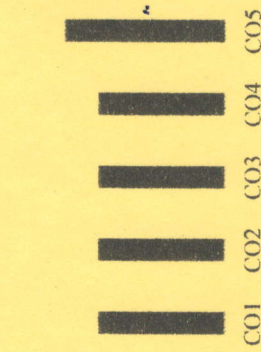
GRAPHICAL REPRESENTATION

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	Mechanical Engineering	Branch	Diploma
Subject Name	Heat Transfer	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
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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
i	State Fourier's Law of conduction.	2	CO1	K1
ii	What is temperature gradient? *	2	CO1	K2
iii	Explain the term thermal conductivity.	2	CO2	K1
iv	What is the unit of thermal conductivity?	2	CO2	K2
v	What are the assumption of fourier law of heat conduction?	2	CO3	K3
vi	Explain homogenous and isotropic material	2	CO3	K1
vii	Explain the term heat transfer coefficient.	2	CO4	K3
viii	List the various application of conduction.	2	CO4	K1
ix	List out the various application of convection.	2	CO5	K2
x	What is the constant value for stefen's Boltzmann?	2	CO5	K3

	efficient on both side s are 650 W/m°C. Calculate the area of heat exchanger		
12	What are the various type of heat exchangers? Explain all types with neat diagram.	10	CO5 K1

Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Calculate the rate of heat transfer per unit area through a copper plate 45 mm thick, whose one face is maintained at 350°C and the other face at 50°C. Take thermal conductivity of the copper as 370W/m°C.	5	CO1	K4
3	A steel plate 10 mm thick has its surfaces maintained at 200°C and 80°C. Calculate the heat flux through the plate. Take thermal conductivity of steel as 45 W/m°C.	5	CO2	K3
4	Determine the rate of heat transfer per unit area through a glass window 8 mm thick, if the inner surface is at 25°C and the outer surface at 5°C. Take thermal conductivity of glass as 1.05 W/m°C.	5	CO3	K6
5	An aluminum slab of 60 mm thickness has one side at 150°C and the other at 30°C. Calculate the heat flux. Use $k=205 \text{ W/m°C}$	5	CO4	K1
6	A plastic wall 20 mm thick separates two environments at 60°C and 25°C. Find the rate of heat transfer per unit area. Thermal conductivity of plastic is 0.2 W/m°C.	5	CO5	K1
7	Explain the all type of mode of heat transfer	5	CO5	K1

Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	The Resistance R experienced by a partially submerged body depends upon the velocity V, length L, viscosity of the fluid μ , density of the fluid ρ and gravitational due to acceleration g. obtain a dimensionless expression for R. using Buckingham's π method	10	CO1	K5
9	Write the all steps for dimensionless analysis using Buckingham's π method	10	CO2	K6
10	The efficiency η of fan depends on the density ρ , the dynamic viscosity μ of the fluid, the angular velocity ω , diameter D of the rotar and discharge Q. Express η in terms of the dimensionless parameters.	10	CO3	K2
11	The flow rate of hot and cold water stream running through a parallel flow heat exchanger are 0.2kg/s respectively. The inlet temperature on the hot and cold side are 75°C and 20°C respectively. The exit temperature of hot water is 45°C. If the individual heat transfer co-	10	CO4	K3

 ARKA JAIN University Jharkhand			[30-6-2025] END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering	Program	Diploma	
Subject Name	Measurement and Metrology	Session	Even 2024-2025	
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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come 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	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating	

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

Q. N	QUESTIONS	Marks	COs	KL	PO
1					
i	What do you understand by the term of metrology?	2	CO2	KL1	PO1
ii	Define the term of measurement?	2	CO3	KL5	PO3
iii	How can you control the quality using measuring tools?	2	CO3	KL1	PO1
iv	What is the error in measurements?	2	CO5	KL1	PO1
v	What is the exact meaning of calibration?	2	CO5	KL1	PO1
vi	What is difference between accuracy and precision	2	CO3	KL5	PO2
vii	Define the term Sensitivity	2	CO3	KL1	PO3
viii	What is the Sine Bar	2	CO1	KL1	PO1
ix	Explain the term Random errors.	2	CO1	KL1	PO1
x	What is the Repeatability	2	CO1	KL1	PO1

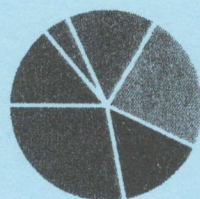
Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 5 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What is error and classify the errors in measurement system	5	CO3	KL2	PO3
3	Differentiate between open loop and close loop control system.	5	CO3	KL2	PO2
4	What is metrology and types of metrology?	5	CO4	KL4	PO4
5	Define measurement, Explain Significance of measurement, Define calibration	5	CO2	KL4	PO1
6	Explain any one type of gear profile measuring instrument	5	CO4	KL2	PO2
7	Calculate the least count of Vernier calliper. Enlist the name of different types of errors in measurement	5	CO3	KL2	PO2
Section C (Answer any TWO out of FOUR) - 20 Marks- (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain Factors influencing selection of measuring instruments, Explain Significance of measurement	10	CO2	KL3	PO1
9	Explain Standards of measurements: Primary & Secondary, Define accuracy and precision	10	CO1	KL2	PO1
10	What is bevel protector and explain its working principle with neat & clean diagram	10	CO5	KL4	PO4
11	Define transducer, Explain Types and working of transducer. Explain Selection factor of transducer	10	CO5	KL3	PO4
12	What is comparators explain any one types of comparator with neat and clean diagram	10	CO5	KL1	PO4

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

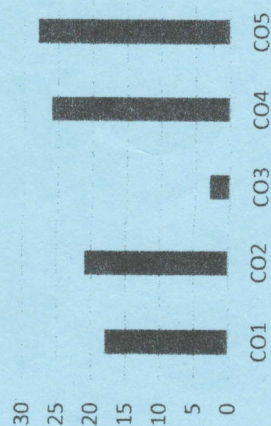
Course Outcomes	CO1	Define accuracy, precision, calibration, sensitivity, repeatability and such relevant terms in metrology
	CO2	Distinguish between various types of errors.
	CO3	Understand the principle of operation of an instrument and select suitable measuring device for a particular application.
	CO4	Explain the concept of calibration of an instrument.
	CO5	Analyse and interpret the data obtained from the different measurements processes and present it in the graphical form, statistical form.

GRAFICAL REPRESENTATION

Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution

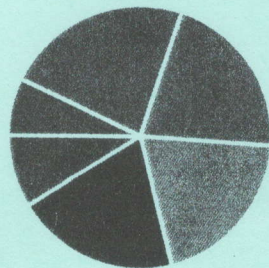


■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcomes	CO1	Analyse and evaluate gas turbine cycle performance
	CO2	Identify the elements of gas turbines and processes of jet propulsion system.
	CO3	Understand different laws governing gases and their mixtures
	CO4	Understand steam boilers and their performance
	CO5	Understand steam turbines and their performance, Understand compressors and condensers and their performance

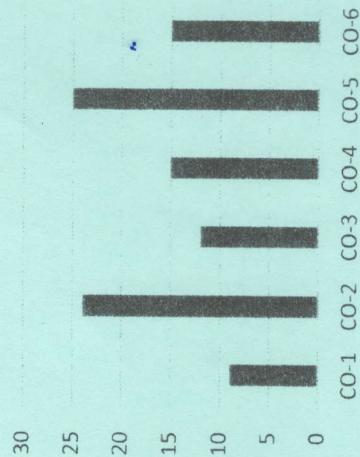
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



ARKA JAIN University
Jharkhand

NAAC
GRADE A
ACCREDITED UNIVERSITY

[02-07-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	Mechanical Engineering	Branch	Diploma
Subject Name	Thermal Engineering II	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 • Steam Table allowed • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student 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

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
i	Draw the Brayton cycle on a P-V diagram and label all processes.	2	CO1	K2
ii	Define isentropic process and its significance in thermodynamic cycles.	2	CO1	K1
iii	What is steam? Explain the types of steam.	2	CO2	K2
iv	What do you mean by dryness fraction?	2	CO2	K3
v	What is the purpose of an economizer in a boiler system?	2	CO3	K1
vi	What are the different forms of steam nozzles?	2	CO1	K2
vii	Compare open-cycle and closed-cycle gas turbine systems.	2	CO1	K1
viii	Differentiate between impulse and reaction steam turbines.	2	CO2	K2
ix	What is the use of Air-preheater?	2	CO2	K3
x	Define superheated steam and explain its advantages over saturated steam.	2	CO3	K1

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the purpose and operational principle of a fusible plug in steam boiler systems.	05	CO2	K4
3	Discuss the function and advantages of an air-preheater in steam power plant operation.	05	CO1	K5
4	Illustrate the Brayton cycle on a Temperature-Entropy (T-s) diagram and identify each thermodynamic process involved in the cycle.	05	CO2	K2
5	Classify the gas turbine on the following basis i) Working cycle ii) Application iii) Cycle of operation iv) Fuels	05	CO3	K2
6	What is the fundamental difference between the operation of impulse and reaction steam turbines?	05	CO4	K4
7	Explain the working of turbojet engine with neat sketch.	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	Given a steam flow system where: Inlet steam conditions: 10.5 bar pressure with 0.95 dryness fraction. Expansion occurs through a convergent-divergent nozzle. Exit steam pressure: 0.85 bar Polytropic index of expansion (n): 1.135 Determine: The steam velocity at the throat under maximum discharge conditions The mass flow rate of steam through the nozzle	10	CO5	K6
9	Explain the working principle of a Babcock and Wilcox boiler with the aid of a labeled diagram.	10	CO5	K5
10	Explain the construction, working principle, and significance of the following boiler accessories in a modern steam power plant: 1. Economizer 2. Superheater 3. Air Preheater 4. Feed Water Pump	10	CO2	K5

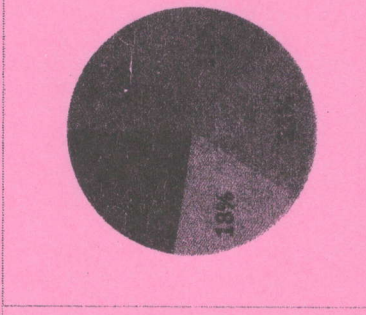
11	Explain the function, construction, and working principles of the following essential boiler mountings in a high-pressure steam boiler system: 1. Safety valves 2. Water level indicators 3. Pressure gauge 4. Fusible plug 5. Blow-off cock	10	CO2	K4
12	Explain with detailed technical analysis the design, operation, and performance characteristics of a modern high-pressure water-tube boiler system.	10	CO4	K6

 ARKA JAIN University Jharkhand				[04-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Mechanical Engineering		Branch	Diploma	
Subject Name	Manufacturing Technology-II		Session	Even, 2024-2025	
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 <u>Four</u> out of Six of Section B • Answer Any <u>Three</u> out of Five of Section C • Possession of Mobile Phone or any kind of <u>Written Material</u>, Arguments with the <u>Invigilator</u> or Discussion with <u>Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>.			
		Knowledge Level (KL)		K5 : Evaluating	
		K1 : Remembering	K3 : Applying		K6 : Creating
		K2 : Understanding	K4 : Analysing		

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)				
Q.N	QUESTIONS	Marks	COs	KL
1				
i	Explain the metal removing process with suitable diagram?	2	CO1	K1
ii	Explain surface grinding?	2	CO2	K4
iii	Define centre less grinding?	2	CO1	K3
iv	Define Orthogonal metal cutting?	2	CO1	K3
v	Explain the multipoint cutting tool?	2	CO1	K1
vi	To Define a Turning Machining Process?	2	CO1	K1
vii	Write difference between step turning and taper turning.	2	CO2	K4
viii	What is function of coolant?	2	CO3	K2
ix	Enlist the name of different types of chip formed during operation?	2	CO1	K1
x	Explain tool life?	2	CO3	K2

Section B (Answer any FOUR out of SIX) – 20 Marks				
(Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain Shielded Metal Arc Welding Process with neat sketch?	05	CO3	K4
3	Draw a schematic diagram of Shaper machine with all main parts?	05	CO4	K5
4	Differentiate between Capstan lathe and Turret lathe?	05	CO1	K2
5	What is drilling operation and their Classifications? Explain Basic parts of milling machines	05	CO1	K3
6	Explain the mechanism of chip formation with the help of schematic diagram.	05	CO2	K4
7	Write process of Gear hobbing and gear shaping processes	05	CO1	K3
Section C (Answer any THREE out of FIVE) – 30 Marks				
(Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Write the Working Principle of Shaper Machine with neat sketch	10	CO2	K5
9	Write the Working Principle of Centre lathe Machine with neat sketch	10	CO1	K2
10	What are drilling, boring and reaming operations? Explain different types of drilling machines.	10	CO3	K3
11	What is milling operation? Also explain different types of milling Process with diagram.	10	CO4	K5
12	What are CNC machines? Enlist different components, advantages and limitations of CNC machines.	10	CO4	K1

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

Course Outcomes	CO1	CO2	CO3	CO4	CO5
Describe the constructional and operational features of centre lathe and other special purpose lathes.					
Describe the constructional and operational features of shaper, planner, milling, and drilling, sawing and broaching machines.					
Explain the types of grinding and other super finishing processes apart from gear Manufacturing processes					
Write a part program for numerical control of machine tools.					
Explain the mechanism of material removal processes.					
GRAPHICAL REPRESENTATION					
					

 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY	[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
• 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 Result in the <u>Cancellation of the Papers.</u>			
Time: 1.5 Hour Max. Marks : 35			
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

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)				
Q. No.	QUESTIONS	Marks	COs	KL
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

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

Course Outcomes	CO1	CO2	CO3
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.			
GRAPHICAL REPRESENTATION			
Bloom's Level wise Marks Distribution		Course Outcome Wise Marks Distribution	
■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6		CO1 CO2 CO3	