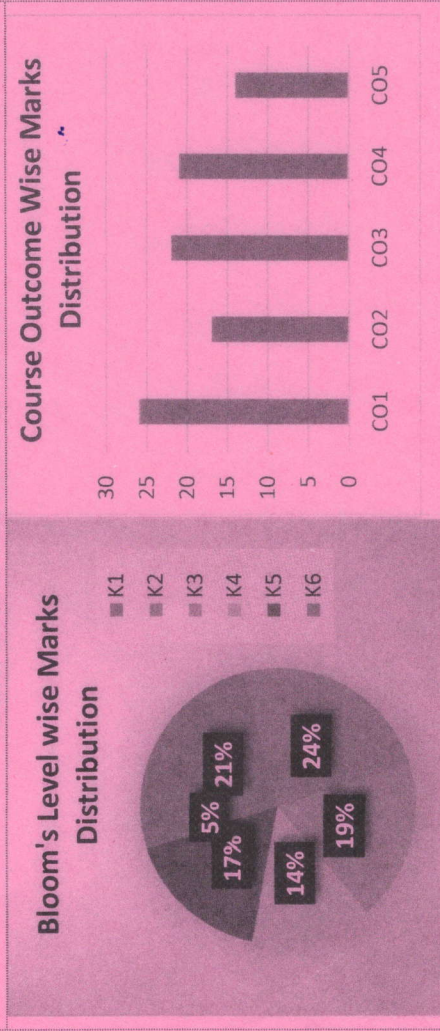


CO1	Remembering the concepts of process planning and cost estimation for various products
CO2	Describe the functions of production control, various production system, different aspects of product development and break even analysis.
CO3	Analysis of problems in lack of product planning, quantity determination in batch production and analysis of process capabilities in a multi-product system.
CO4	Calculate the economic order quantity & economic lot size in inventory control.
CO5	Evaluate and estimate cost of manufacturing by analysing the processes.

GRAPHICAL REPRESENTATION



JGI	ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[06-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Mechanical Engineering	Branch	B. Tech
Subject Name	Elective V - Process Planning and Cost Estimation	Session	Even, 2024-2025
Semester	VIII	Year	May, 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 comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
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	Define Process Planning in Manufacturing.	2	CO1	K1
ii	Write advantages of Computer Aided Process Planning.	2	CO1	K2
iii	What are the factors to be considered during the selection of a process?	2	CO2	K1
iv	What are the main reason for using jigs and fixture?	2	CO2	K3
v	What is the difference between routing sheet and operations list?	2	CO3	K4
vi	Classify different allowances Considered in cost estimation.	2	CO3	K1
vii	What shall be the effect of overestimate?	2	CO4	K5
viii	What are the causes of depreciation?	2	CO2	K2
ix	Define production cost.	2	CO5	K4
x	What are the typical data required for cutting time calculation in shaping.	2	CO5	K3

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the role of a Process Planner in a Manufacturing Industry.	5	CO1	K1
3	What are the factors to be considered in machine selection.	5	CO3	K2
4	Explain the process planning procedure and List out the information required for process planning.	5	CO1	K3
5	Discuss various methods of costing in detail.	5	CO2	K2
6	Explain the different items involved in the estimation of arc welding cost of job.	5	CO4	K6
7	Show and explain different process parameters for Shaper machine. Also derive equation for machining time in shaper machine. Explain all the terms used in formula.	5	CO3	K5

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the technological frame work of process planning by using a block diagram.	10	CO3	K1
9	Prepare the operation and route sheet for the component shown in fig.	10	CO2	K4
10	What are different cost involved in production? A factory produces 100 bolts and nuts per hour on a machine. Material cost is Rs. 375, labour Rs. 245 and direct expense is Rs. 80. The factory on cost is 150% and office on cost is 30%. If sales price is Rs. 11.30 find whether company incurs profit or loss.	10	CO3	K5

	ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		[08-05-2025] END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering			B. Tech		
Subject Name	Elective VI - Automobile Engineering			Program Session	Even, 2024-2025	
Semester	VIII			Year	May, 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, <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 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 are the functions of a frame?		2	CO1	K2
ii	What are the methods of cooling in IC engines?		2	CO1	K1
iii	What are the components of Multi point fuel injection system?		2	CO2	K2
iv	Mention the methods controlling smoke from diesel engine?		2	CO2	K1
v	What are the types of clutch?		2	CO4	K1
vi	What is the principle of a "synchromesh" gear box?		2	CO4	K2
vii	What is known as power steering?		2	CO5	K2
viii	How is shock absorber fitted in the vehicle?		2	CO5	K1
ix	What are the alternative fuels?		2	CO3	K4
x	What are the main components of electric-hybrid vehicles?		2	CO5	K2

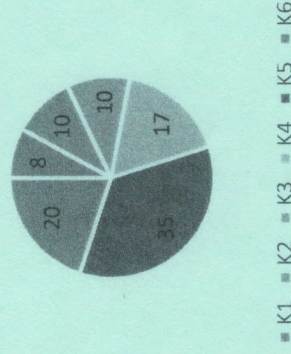
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 5 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Draw the layout of four-wheel drive and list its advantages and disadvantages.	05	CO1	K5
3	What are the main components of an automobile? Describe all of them briefly.	05	CO1	K3
4	Sketch and explain the construction and operation of a simple carburettor?	05	CO3	K5
5	Describe the working of a "single plate clutch" with a neat sketch and write its advantages and disadvantages.	05	CO5	K5
6	Explain the Ackermann steering mechanism and Davis steering mechanism with a neat sketch.	05	CO5	K3
7	Write the advantages and disadvantages of alternate fuel?	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	How do you check the alignment of chassis frame? Explain clearly.	10	CO1	K5
9	What is Common Rail Direct Ignition (CRDI) system? Explain with a suitable sketch. What are the advantages and disadvantages of CRDI?	10	CO2	K6
10	Explain the common troubles encountered in gear boxes and suggest suitable remedies.	10	CO4	K5
11	Define and explain the following front wheel alignment factors: • Camber • Caster • King-pin inclination • Toe-in • Toe-out	10	CO5	K4
12	Write short notes about Hybrid vehicle and write its principle and mention the main components of a hybrid transmission?	10	CO2	K6

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

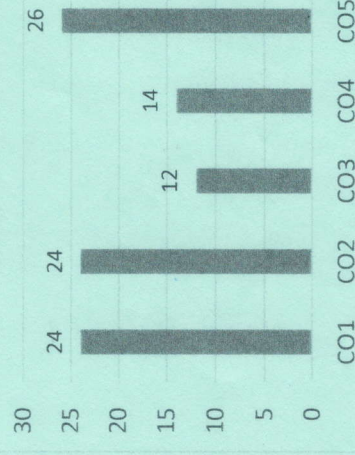
Course Outcomes	CO1	Evaluate the suitability of different automobile chassis designs.
	CO2	Understand efficient engine systems through advanced electronic and mechanical integration.
	CO3	Analyze emission control with 3-way catalytic converters adhering to global standards.
	CO4	Understand transmission mechanisms for diverse vehicle propulsion and operation systems.
	CO5	Analyze steering mechanisms and braking systems for optimal vehicle control.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



 ARKA JAIN University Jharkhand			[10-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Mechanical Engineering		Branch	B. Tech
Subject Name	Open Elective-V - Renewable Energy Technologies		Session	Even, 2024-2025
Semester	VIII		Year	May, 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 <u>Mobile Phones</u> or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator</u> or <u>Discussing with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the 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-x) – 20 Marks					
Q. N	QUESTIONS	Marks	COs	KL	PO
1					
i	What are the Instruments for measurement of solar radiation	2	CO4	K2	PO1
ii	What is the principle of OTEC?	2	CO1	K2	PO3
iii	What do understand by photovoltaic conversion?	2	CO3	K1	PO1
iv	Give a brief description on types of wind turbines.	2	CO5	K2	PO1
v	Write down the advantages and limitations of solar energy	2	CO5	K2	PO1
vi	Explain electromagnetic energy storage method	2	CO4	K1	PO2
vii	What is meant by solar green house?	2	CO4	K2	PO3
viii	What the significance of strip chart and magnetic tap.	2	CO3	K2	PO1
ix	Draw the hydrothermal convective region.	2	CO4	K2	PO1
x	What is meant by Bio fouling?	2	CO5	K2	PO1

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	How do you calculate solar radiation on tilted surfaces?	5	CO5	K2	PO3
3	Derive the equation for solar energy balance equation and collector efficiency their advantages and limitations.	5	CO3	K2	PO1
4	Describe the layout and working of a continuous solar cooling system.	5	CO4	K2	PO1
5	What is a community biogas plant? Explain the problems encountered in it	5	CO5	K1	PO2
6	Explain the Principle of operation of different collectors	5	CO5	K2	PO4
7	Explain the principle of solar photovoltaic power generation	5	CO3	K2	PO1

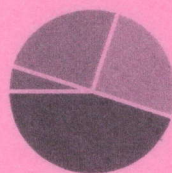
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Classify different solar energy storage systems and explain them in brief	10	CO2	KL3	PO1
9	What is the source of tidal energy? What is the minimum tidal range required for the working of a tidal plant? How much is the potential in tides?	10	CO1	KL2	PO1
10	How are solar collectors classified? What are the important features of a solar collector?	10	CO5	KL4	PO4
11	Draw the line diagram and explain the working of hybrid OTEC cycle.	10	CO5	KL3	PO4
12	Discuss on potential of renewable energy sources with reference to India.	10	CO5	KL1	PO4

Course Outcomes	CO1	CO2	CO3	CO4	CO5
Explain the basic principles of energy conversion processes and devices used therein					
Identify suitable renewable source and technology for a given requirement					
Undertake field projects in these areas					
Develop capability to do basic design of bio gas plant					
Analyze the ocean energy power generation application.					

GRAPHICAL REPRESENTATION

Bloom's level wise marks distribution



■ CO1 ■ CO2 ■ CO3 ■ CO4 ■ CO5

Course outcome wise marks distribution

