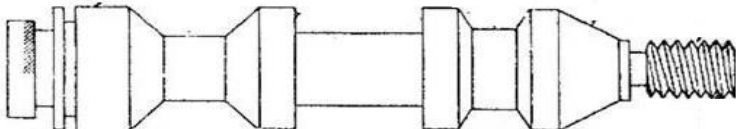


<i>Module -1</i>			
<i>Q. No.</i>	<i>Questions</i>	<i>Bloom's LL</i>	<i>COs</i>
1	Describe the role of mechanical engineers in the automobile industry	3	1
2	Why is the Pelton turbine classified as an impulse turbine? Explain with a neat sketch how energy conversion takes place in the Pelton wheel.	3	1
3	Suggest improvements to conventional braking systems for better energy efficiency and reduced wear.	3	1
4	Compare disc and drum brakes in terms of heat dissipation and wear.	4	1
5	List the component exist in your house and name the materials used for them and give reasons why that material used for the component.	5	1

<i>Module -2</i>			
<i>Q. No.</i>	<i>Questions</i>	<i>Bloom's LL</i>	<i>COs</i>
1	Which type of engine is suitable for a low transport vehicle like a scooter or small car?	3	5
2	Explain the working of an Otto cycle engine with a P-V diagram.	3	2
3	Explain how energy is managed and stored in a hybrid vehicle.	3	2
4	Propose an integrated solution to improve both IC engine efficiency and EV battery life.	4	2
5	Identify the problems arise in IC engines and Electric vehicles and suggest suitable solutions to overcome those problems and justify.	5	2

Module -3			
Q. No.	Questions	Blooms LL	COs
1	Explain the difference between ferrous and non-ferrous materials with examples.	3	4
2	Discuss an example of a composite material used in aircraft fuselage.	3	4
3	Describe the shape memory effect in SMAs with a neat diagram.	3	2
4	Analyze how carbon content affects the mechanical properties of steel.	4	4
5	Design a lightweight bike frame using a combination of composite materials and justify your choice.	6	4

Module -4			
Q. No.	Questions	Bloom's LL	COs
1	Classify the various manufacturing processes and explain with examples where each process is most suitable.	3	4
2	Explain briefly the Operations carried out on a lathe and milling machines.	3	4
3	Design a manufacturing sequence for the given machine element using lathe operations. Justify the selection and sequence of at least three operations. 	3	4
4	Compare the operations of a lathe and a milling machine for producing a given mechanical component. Evaluate which machine would give better dimensional accuracy and surface finish.	4	4
5	A company wants to manufacture a complex metal component using additive manufacturing. Identify the steps they would follow from design to finished product and explain the role of support structures in the process.	5	4

Module -5			
Q. No.	Questions	Bloom's LL	COs
1	Define Mechatronics and explain its importance in modern engineering systems.	3	5
2	Describe the basic elements of automation system with block diagram	3	5
3	Select suitable control system where the control action is independent of desired output, explain with a block diagram and mention its advantages and disadvantages.	3	5
4	Compare incremental and absolute encoders in terms of accuracy, cost, and	4	5

	application suitability in robotics.		
5	Develop a block diagram for a new automation system for temperature control in a chemical process, choosing the appropriate control strategy. Explain the advantages and limitations of your approach.	5	5

Note:

1. Questions shall be framed by consolidating comprehensively from the following sources
 - Exercise problems of text books/ references
 - Previous year question VTU exam Question paper. (Mark the year/exam beside the question)
 - Questions by Experts during Interview/Academic Audit
 - Internet sources/ other Universities examination question papers.
 - Own / experience.
2. Questions shall follow all the Bloom's learning levels with appropriate action verbs
3. There shall be a total of 25 questions considering 5 questions from each module, of which, 3 questions at L3, 2 questions each at L4/L5.
4. Ensure the coverage of all COs
5. Rubrics to be specified for all assignment questions.