

Seat No.:	Q. Paper Code: FTC-A-010			SET	A
	<b>Fabtech Technical Campus, College of Engineering &amp; Research, Sangola</b>				
	(An Autonomous Institute)				
	<b>Mechanical Engineering</b>				
	Academic Year: -2025-26, Semester-I				
<b>Advanced Manufacturing Processes (25PME11172)</b>					
<b>Regular End Semester Examination Winter 2025-26 [Dec./Jan]</b>					
<b>Class:</b>	F. Y. M. Tech.	<b>Day &amp; Date:</b>		Saturday, 03/01/2026	
<b>Duration:</b>	03 Hrs.	<b>Max. Marks:</b>		60 Marks	
<b>Time:</b>	11:00 AM TO 02:00 PM				
<b>Instructions:</b>					
1) All Questions are compulsory.					
2) Figures to the right indicate full marks.					
3) Draw neat diagram wherever necessary.					
4) Make suitable assumptions if necessary and state it clearly.					
5) Use of non-programmable calculator is allowed.					
Q. No.	Questions	Marks	CO	BL	
<b>Q. 1</b>	<b>Attempt any two of the following</b>	<b>12</b>			
1	Derive the expressions for cutting forces in orthogonal cutting and explain the role of shear stress in the chip formation zone.	6	1	L4	
2	Derive the relationship for shear angle based on Merchant's theory and clearly state the assumptions considered in the derivation.	6	1	L3	
3	Classify the different types of chips produced in metal cutting using neat sketches and explain the cutting conditions responsible for their formation.	6	1	L3	
<b>Q. 2</b>	<b>Attempt any two of the following</b>	<b>12</b>			
1	Define composite materials. Discuss the basic requirements for forming composites and classify composites based on matrix and topology.	6	2	L2	
2	Describe the Spray Processes, especially the Osprey process, and discuss their application in MMC fabrication.	6	2	L4	
3	Explain the role of matrix and reinforcement in composite materials and apply this understanding to describe commonly used matrices in metal matrix composites (MMCs).	6	2	L3	
<b>Q. 3</b>	<b>Attempt any two of the following</b>	<b>12</b>			
1	Explain the working principle of ultrasonic welding and apply it to discuss its applications and advantages in joining thin and dissimilar materials.	6	3	L3	
2	List the factors influencing the selection of a welding process and apply them to explain their significance with suitable examples.	6	3	L3	
3	Explain the working principle of TIG welding and apply the knowledge of its variables to discuss its applications.	6	3	L3	

<b>Q. 4</b>	<b>Attempt any two of the following</b>	<b>12</b>		
<b>1</b>	Explain the Selective Laser Sintering (SLS) process. Discuss its applications in additive manufacturing.	<b>6</b>	4	L2
<b>2</b>	Explain the principle and process of stereolithography (SLA) and apply it to discuss its advantages and applications.	<b>6</b>	4	L3
<b>3</b>	Explain the EDM process with a neat sketch and apply the working principle to discuss its parameters, advantages, and limitations.	<b>6</b>	4	L3
<b>Q. 5</b>	<b>Attempt any two of the following</b>	<b>12</b>		
<b>1</b>	Explain the various types of tool holders with neat sketches and apply their use in machining operations	<b>6</b>	5	L3
<b>2</b>	Describe the major components of a CNC machining center and explain how each component contributes to machining accuracy.	<b>6</b>	5	L4
<b>3</b>	Explain different methods of CNC part programming with suitable examples.	<b>6</b>	5	L2