Total No. of Printed Pages: 02

PRN No.	

PAPER CODE	V3T5-2114C (RE)

(AY:2025-26) December 2025 (ENDSEM) EXAM

TY (SEMESTER - I)

COURSE NAME: Advanced Manufacturing Processes Branch: Mechanical COURSE CODE: ME31234C

T.Y (Pattern 2023)

[Max. Marks: 40]

Time: [1Hr 30 Min]

(*) Instructions to candidates:

1) **Figures to the right indicate full marks. Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory. Solve any two sub question each from Questions 1 and 2**
4) **Solve any one sub question (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Explain the process used for the assembly of axisymmetric automotive oil filter canisters.	[4]	1	2
	b) Describe the process suitable for the manufacturing of blower housing and basins.	[4]	1	2
	c) Explain the Petro-Forge process with a neat sketch used for asymmetrical forging and bar cropping.	[4]	1	2
Q2	a) Describe with a neat sketch the different metallurgical zones in friction stir welding.	[4]	2	2
	b) Explain the working of the friction stir welding process with various temperature zones.	[4]	2	2
	c) Explain the suitable modern joining process used for the manufacturing of surgical instruments, electronic components, and sensors.	[4]	2	2
Q3	a) State the applications of shaped tube electrolytic machining.	[2]	3	1
	OR			
	b) State the limitations of the electrochemical grinding process.	[2]	3	1
	c) Describe the process used to fabricate the electrodes for pressure micro sensors and resonance detection micro sensors.	[4]	3	2

Q4	a) State the advantages of diamond being used as a cutting tool material for ultra-precision micromachining. OR b) State the various process parameters which influence ultrasonic micromachining (USMM). c) Explain the different contributing mechanisms of material removal involved in ultrasonic micromachining .	[2] [2] [4]	4 4 4	1 1 2
Q.5	a) State the seven categories of additive manufacturing processes specified by the ASTM standard. OR b) State the disadvantages of the sheet lamination process. c)Describe the powder bed fusion (PBF) additive manufacturing process.	[2] [2] [4]	5 5 5	1 1 2
Q.6	a) State with a schematic the principle of the atomic force microscope (AFM). OR b) List the various types of electron microscopes. c) Explain the operating principle of the Scanning Electron Microscope (SEM) with a neat sketch.	[2] [2] [4]	6 6 6	1 1 2

[Note- BT Level- 1-Remember, 2-Understand, 3-Apply, 4-Analyse, 5- Evaluate, 6-Create]