

Total No. of Questions – [06]

Total No. of Printed Pages: 2

G.R. No.	
----------	--

DECEMBER 2021 - ENDSEM EXAM
T. Y. B. TECH. (MECHANICAL) (SEMESTER - I)
COURSE NAME: ADVANCED MANUFACTURING PROCESSES
COURSE CODE: MEUA31183C
(PATTERN 2018)

Time: [1Hr]

[Max. Marks: 30]

(*) Instructions to candidates:

- 1) Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

Q. No.	Question Description	Marks
Q.1 a	The type and size of abrasive particles used in ultrasonic micro-machining affect the material removal rate significantly. Justify the statement.	4
Q.1 b	Suggest the suitable requirements for a cutting tool material that has to satisfy while turning in the micro-machining domain.	6
OR		
Q2 a	In diamond turn machining, higher spindle speed causes rapid tool wear. Justify the statement.	4
Q2 b	Suggest a suitable process with justification to produce micro-holes. Sketch a schematic of the suggested process.	6
Q.3 a	In additive manufacturing while converting CAD data to STL format, one has to obtain optima between file size and part accuracy. Justify the statement.	4
Q.3 b	Suggest a suitable process with working principle to additively manufacture titanium alloys, aluminum alloys, precious metals, and stainless steel. Sketch a schematic of the suggested process.	6
OR		
Q.4 a	Post-processing is one of the important steps in additive manufacturing. Justify the statement.	4
Q.4 b	Suggest a suitable process with working principle to additively manufacture eutectic metals, metal clay, and rubber. Sketch a schematic of the suggested process.	6
Q.5 a	Scanning tunneling microscopes are used measure surface roughness of high precision optical components. Comment on the statement.	4
Q.5 b	The material properties such as friction, electrical forces, magnetic forces,	6

conductivity can be measured by atomic force microscope. Comment on the statement.

OR

- Q.6 a Suggest a suitable effective non-destructive process with its working principle to determine the crystal structure of the compound or material. 4
- Q.6 b Scanning electron microscope provides the surface morphological information. However, transmission electron microscope provides internal composition of the material. Justify the statement. 6