

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: B. TECH.
BRANCH: PIE/MECH**

**SEMESTER: VII
SESSION: MO/2025**

SUBJECT: PE406 NON-CONVENTIONAL MACHINING PROCESSES

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q.1(a)	Briefly discuss the role of stand-off distance (SOD) in Abrasive Jet Machining.	[2]	1 3
Q.1(b)	Calculate the MRR/impact in AJM. If the MRR is $0.5 \text{ mm}^3/\text{sec}$, the mass flow rate of abrasive is 3 g/min, the density is 3 g/cc, and the grit size is 60 microns. Also, calculate the indentation radius.	[3]	1 3
Q.2(a)	Explain with neat sketches the construction and working of an Ultrasonic Machining (USM) system, highlighting its major components and their functions.	[5]	1 2
Q.3(a)	Write the difference between electroplating and electrochemical machining.	[2]	2 2
Q.3(b)	Explain the effect of current density on the surface finish in ECM.	[3]	2 3
Q.4(a)	Analyze the process steps in chemical machining and explain the importance of each stage.	[5]	2 2
Q.5(a)	With a neat sketch, explain the working principle of EDM.	[2]	3 2

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