BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2024)

CLASS: BTECH   SEMESTER : VII
BRANCH: PIE   SESSION : MO/2024

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 a total of 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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Q.1	Analyze the importance of non-conventional machining processes in modern manufacturing. Discuss how these processes overcome the limitations of conventional machining methods in terms of material properties, precision, and complexity of shapes. Provide relevant examples to support your evaluation.	[5]	2	5
Q.2	Evaluate the impact of various parameters on the performance of ultrasonic machining. Specifically, analyze how changes in amplitude of vibration, frequency of vibration, abrasive size, volume concentration of abrasive in water slurry, and flow strength of the work material influence the material removal rate. Support your evaluation with theoretical explanations or practical examples.	[5]	3	4
Q.3	Compare and contrast the Cut and Peel Maskant method with the Photographic Resist Method in terms of their application scenarios and accuracy requirements. How does each method address the needs of different production quantities and part complexities?	[5]	2	4
Q.4	Using Faraday's Law and the principles of Electrochemical Machining, mathematically demonstrate how the gap between the tool and the workpiece increases in proportion to the square root of time if no feed is provided.	[5]	1	3
Q.5	Develop and analyze mathematical models to predict the effects of voltage, current, and pulse on/off time on material removal rate and surface roughness in Electrical Discharge Machining.	[5]	3	4

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