

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

**CLASS: B. TECH
BRANCH: PRODUCTION ENGG.**

**SEMESTER : VII
SESSION : MO/2022**

SUBJECT: PE406 NON-CONVENTIONAL MACHINING PROCESSES

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- | | | | | |
|--------|--|-----|-----|-----|
| Q.1(a) | “Tool may be present or may not be present in non-conventional machining process”
- Justify the comment with the proper explanation. | [5] | CO1 | BL5 |
| Q.1(b) | Analyze the process capabilities of the different mechanical erosion-based non-conventional machining processes. | [5] | CO2 | BL4 |
| Q.2(a) | Explain the basis of the selection of ChM and ECM processes for any given job concerning the material type, feature capability, surface finish and integrity, MRR, tool wear, environmental issues, and skill requirement. | [5] | CO5 | BL4 |
| Q.2(b) | With the help of Faraday’s classical law of electrolysis derive the expressions for MRR in the ECM process for alloys. | [5] | CO3 | BL3 |
| Q.3(a) | Name the types of pulse generators used in EDM. Enumerate the merits and demerits of each one. | [5] | CO1 | BL1 |
| Q.3(b) | Explain the effects of WEDM process parameters on the MRR. | [5] | CO3 | BL4 |
| Q.4(a) | Explain the working of the laser turning and the laser milling operations using clear illustrations. | [5] | CO1 | BL2 |
| Q.4(c) | Explain the components of EBM and their functions using a schematic diagram. | [5] | CO2 | BL2 |
| Q.5(a) | Compare the similarities and dissimilarities of EDG with ECG | [5] | CO4 | BL4 |
| Q.5(b) | Discuss with a schematic diagram the working principle of the EDM process with ultrasonic assistance. What role does ultrasonic assistance play in the EDM process? | [5] | CO4 | BL2 |

:::::21/11/2022:::::M