

6E7012

Roll No. _____

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B.Tech. VI Semester (Main & Back) Examination, April/May-2017

Mechanical Engineering

6ME2A Newer Machining Methods

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal marks**. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.*

Unit-I

1. a) Why newer machining methods are also known as unconventional machining method? Elaborate your answer. (8)
- b) Classify modern machining processes and show mechanism of metal removal, energy source of various modern machining processes. (8)

OR

1. a) Explain the abrasive action in Abrasive Flow Machining (AFM) process. (8)
- b) Describe briefly Magnetic Abrasive Finishing (MAF) process for finishing internal surface of hollow cylindrical surface/workpiece. (8)

Unit-II

2. a) What is abrasive slurry in ultra sonic Machining (USM)? State clearly the functions of liquid medium in USM. (8)
- b) Explain how Amplitudes and frequency of vibrations effect the material removal rate (MRR) of USM. (8)

OR

2. a) Discuss the effect of stand off distance (SOD) on material removal rate (MRR) in abrasive jet machining (AJM). Also discuss the parameters of nozzle design for AJM. (8)
- b) What is the principle of water jet machining (WJM). Explain the role of pump and nozzle in WJM. (8)

Unit-III

3. a) Elaborate the mechanism of metal removal in EDM process. (8)
b) Briefly describe the Generators in EDM process. (8)

OR

3. a) How electron beam is generated in Electron Beam Machining (EBM) process. State the role of magnetic deflection coil with suitable sketch. (8)
b) What is plasma torch in Plasma Arch Machining (PAM) process? Discuss the generation of plasma in PAM. (8)

Unit-IV

4. a) Explain the role of Tool-work gap in Electro Chemical Machining (ECM) with neat sketch. (8)
b) Briefly discuss the electrochemical machining of iron using sodium chloride as electrolyte stating the chemical processes. (8)

OR

4. a) What are the important factors for designing the tool in ECM process. Explain with proper diagram. (8)
b) Describe the working principle of Electro Chemical Grinding (ECG) process. (8)

Unit-V

5. a) Briefly explain Micro drilling and Micro milling. (8)
b) What are benefits & special features of Nano machining. (8)

OR

5. a) Discuss with proper sketches the evaluation of subsurface damages in Nano and Micro machining. (8)
b) Write short notes on (8)
i) Nano scale cutting
ii) Micro turning

