

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2125)

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B. Tech 8th Semester Examination

Modern Manufacturing Process (ME) (OS)

ME-8013

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question from each of the sections A, B, C and D. Questions in section E is compulsory.

SECTION - A

1. Explain the process of Ultrasonic Machining with help of suitable diagram. State the effect of process parameters on material removal rate. (20)
2. Explain the process with a suitable diagram stating the process parameters. What is the difference between Abrasive Jet Machining and Water Jet Machining? (20)

SECTION - B

3. Explain the process of Electrochemical Machining. State the advantages and disadvantages of the process. State the application of this process. (20)
4. The frontal working area of the electrode is 2000mm^2 in a certain ECM operation in which the applied current=1800amps and the voltage=12 volts. The material being cut is nickel whose specific removal rate $C=3.42 \times 10^{-2}$. (a) If the process is 90% efficient determine the rate of metal removal in mm^3/min (b) If the resistivity of the electrolyte =140ohm-mm, determine the working gap. (20)

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SECTION - C

5. Explain the process of wire cut EDM with suitable diagrams. State the advantages and limitations of the process. (20)
6. Describe three methods of heating the work material in the process of hot machining. Give their relative advantages and disadvantages. (20)

SECTION - D

7. Explain the process of plasma arc machining. Explain in detail with suitable diagrams. (20)
8. Explain the process of Electron beam machining. Explain in detail with suitable diagrams. (20)

SECTION - E

9. Answer all the following:
 - (i) Name the four principal steps in chemical machining.
 - (ii) What is meant by "overcut" in electric discharge machining?
 - (iii) Name four metal removal processes based on thermal energy.
 - (iv) What is the full form of LASER?
 - (v) Name the four categories of non traditional machining processes based on principal energy form.
 - (vi) Write down the expression for metal removal rate in case of electric discharge machining. Stating clearly the symbols used and the units.
 - (vii) How grain growth model different from the hammering model in Ultra Sonic machining?
 - (viii) What is the method of hot machining?
 - (ix) How does increasing discharge current affect metal removal rate and surface finish in electric discharge machining'?
 - (x) What is the principle behind Ultrasonic Machining?
(10×2=20)