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10ME665

Sixth Semester B.E. Degree Examination, June/July 2013

Non-Traditional Machining

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1
 - a. Justify the need of unconventional manufacturing process in today's industries. (06 Marks)
 - b. Distinguish between conventional and unconventional manufacturing process. (04 Marks)
 - c. What are the basic factors upon which the conventional manufacturing processes are classified? Explain. (10 Marks)
- 2
 - a. Explain with help of a neat sketch the working principle of ultrasonic machining process, and also mention its advantages. (10 Marks)
 - b. Explain how various process parameters influence the material removal rate in ultrasonic machining process. (10 Marks)
- 3
 - a. Explain how the following parameters influence the metal removal rate in abrasive jet machining process: i) Nozzle tip distance; ii) Velocity of abrasive; iii) Abrasive flow rate; iv) Gas pressure. (10 Marks)
 - b. Explain the desired properties of abrasive materials used in abrasive jet machining. (05 Marks)
 - c. Which are the abrasive materials used in abrasive jet machining? (05 Marks)
- 4
 - a. With suitable sketches, explain the metal removal mechanism in electro-chemical grinding. (08 Marks)
 - b. Why are chemical machining and electro-chemical machining considered as chipless machining? Explain the mechanisms of metal removal on both cases and compare it with conventional grinding process. (12 Marks)

PART - B

- 5
 - a. Explain in brief the following in chemical machining process: i) Maskants; ii) Etchants. (08 Marks)
 - b. With the help of neat sketches, explain the different steps involved in chemical blanking. (12 Marks)
- 6
 - a. Discuss the factors influencing the choice of electrode material in EDM. (05 Marks)
 - b. Explain with help of a neat sketches any two types of flushing Methods used in EDM. (05 Marks)
 - c. Explain with help of neat sketches, the mechanism of metal removal in EDM process, and also mention its advantages and disadvantages. (10 Marks)
- 7
 - a. With neat sketch, explain the plasma arc cutting (PAC) process and also mention its applications. (10 Marks)
 - b. Which are the important considerations are to be made in the design of plasma torch? (04 Marks)
 - c. Mention any two advantages and disadvantages of plasma arc machining. (04 Marks)
- 8
 - a. With a neat sketch, explain the mechanism of metal removal in LBM process. (08 Marks)
 - b. State the advantages, disadvantages and application of EBM. (06 Marks)
 - c. Explain how the electron beam is generated in electron beam machining (EBM) process. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written, eg. 42-8-50, will be treated as malpractice.