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10AE35

**Third Semester B.E. Degree Examination, January 2013**  
**Manufacturing Processes**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART - A**

- 1
  - a. Explain the varieties of components produced by casting process. (08 Marks)
  - b. Explain the various pattern allowances and their importance. (08 Marks)
  - c. List out the various types of binder used in moulding sand along with its characteristics. (04 Marks)
- 2
  - a. List out the basic requirement of base sand. (06 Marks)
  - b. Briefly discuss the method of core making. (08 Marks)
  - c. Explain i) Fettling and ii) Cleaning of castings.. (06 Marks)
- 3
  - a. Explain sand slinger. (04 Marks)
  - b. Explain with the neat sketch : i) Sweep mould ii) CO<sub>2</sub> mould. (06 Marks)
  - c. Explain the following, with the neat sketch :  
 i) Centrifugal casting ii) Thixo casting iii) Continuous casting process. (10 Marks)
- 4
  - a. Discuss the various reactions in gas welding. (06 Marks)
  - b. List out the various flame characteristics. (08 Marks)
  - c. Compare TIG and MIG welding. (06 Marks)

**PART - B**

- 5
  - a. Explain the various methods used to inspection of casting and welding. (10 Marks)
  - b. Discuss the various holography methods of inspection. (06 Marks)
  - c. Define i) Radiography ii) Eddy current. (04 Marks)
- 6
  - a. Give the expression for shear plane angle in terms of chip thickness ratio and back rake angle. (10 Marks)
  - b. A mild steel bar is turned on a lathe with a cutting tool having rake angle 10<sup>0</sup> and with a cutting speed of 200 mpm. If the width of cut is 3mm and uncut thickness is 0.3mm, determine i) shear angle ii) cutting force iii) thrust force iv) machining constant for mild steel work piece. (10 Marks)
- 7
  - a. List out the desired properties of cutting tool materials. (06 Marks)
  - b. Discuss the selection of cutting fluids for a particular operation. (06 Marks)
  - c. Explain the various factors affecting heat generation. (08 Marks)
- 8
  - a. Compare conventional and nonconventional machining processes. (08 Marks)
  - b. Explain the principle working of ECM process with its neat sketch. Give its advantages and disadvantages, applications. (12 Marks)

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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.