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### Third Semester B.E. Degree Examination, June/July 2011

## Manufacturing Process - I

Time: 3 hrs.

Max. Marks:100

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

#### PART – A

- 1 a. Enumerate the different steps involved in making a casting. (05 Marks)
- b. Explain the terms pattern, core, mould and casting in foundry process. (04 Marks)
- c. What is construction allowance? Discuss briefly why contraction allowance is important for pattern. (06 Marks)
- d. What are additives? List the various additives used in moulding sand. (05 Marks)
- 2 a. Describe the desirable properties of moulding sand. (05 Marks)
- b. What is meant by a core? Explain briefly different binders used for making the cores. (05 Marks)
- c. Explain the function of each component in a gating system with a neat sketch. (05 Marks)
- d. Explain with a neat sketch, sand slinger moulding machine. (05 Marks)
- 3 a. With neat sketch, explain briefly the different steps involved in a shell moulding process. (08 Marks)
- b. Explain any two of the following casting processes with neat sketch :
  - i) Squeeze casting process
  - ii) True centrifugal casting
  - iii) Hot chamber die casting process. (12 Marks)
- 4 a. How are melting furnaces classified? (04 Marks)
- b. With a neat sketch describe the operation of a cupola furnace. (08 Marks)
- c. With a neat sketch explain the working of electric arc furnace. (08 Marks)

#### PART – B

- 5 a. Define welding and give the classification of welding processes. (04 Marks)
- b. Explain with a neat sketch submerged arc welding process and mention its advantages. (06 Marks)
- c. Explain any two welding processes with neat sketch:
  - i) TIG welding
  - ii) MIG welding
  - iii) Atomic hydrogen welding. (10 Marks)
- 6 a. Explain the principle of resistance welding with a neat sketch. Discuss the variables responsible for resistance welding. (08 Marks)
- b. Explain the following welding processes with a neat sketch:
  - i) Explosive welding process
  - ii) Electron beam welding process. (12 Marks)
- 7 a. Define weldability. What are the factors that affect the weldability of steel? (06 Marks)
- b. Explain : i) Solidification of the weld ii) Heat affected zone during welding. (08 Marks)
- c. Write notes on : i) Flux used in welding ii) Welding defects. (06 Marks)
- 8 a. What is NDT? (02 Marks)
- b. Differentiate between soldering, brazing and welding. (06 Marks)
- c. Explain magnetic particle inspection of welds. (06 Marks)
- d. Explain the brazing process, its advantages and limitations. (06 Marks)

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