



P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Third Semester, B.E. - Mechanical Engineering
Semester End Examination; Dec. - 2014
Manufacturing Process - I

Time: 3 hrs

Max. Marks: 100

*Note : i) Answer FIVE full questions, selecting ONE full question from each Unit.
 ii) Assume suitable missing data if any.*

Unit - I

- | | |
|--|----|
| 1. a. Briefly discuss the steps involved in making a casting. | 8 |
| b. Sketch and explain the working of a cupola with different Zones within the Coke bed. | 12 |
| 2. a. Give a brief classification of manufacturing processes. | 6 |
| b. Sketch and explain constructional features and working principle of electric arc furnace. | 14 |

Unit - II

- | | |
|---|----|
| 3. a. Discuss the different materials used in making a pattern. | 6 |
| b. Explain the types of binders used in moulding sand. | 6 |
| c. What is the need for pattern allowances? Explain each one of them briefly. | 8 |
| 4. a. Explain with a neat sketch elements of a gating system. | 12 |
| b. Explain with neat sketch types of defects in castings. | 8 |

Unit - III

- | | |
|---|----|
| 5. a. Explain with a sketch, the shell moulding process. | 10 |
| b. Explain: i) Centrifugal casting process ii) Continuous casting process. | 10 |
| 6. a. Explain with a sketch CO ₂ moulding process. | 10 |
| b. Explain: i) Gravity die casting process ii) Squeeze casting process. | 10 |

Unit - IV

- | | |
|---|----|
| 7. a. Differentiate between TIG and MIG welding. | 6 |
| b. Explain the following with a neat sketch: | 14 |
| i) Atomic hydrogen welding ii) submerged arc welding. | |
| 8. a. Describe with sketch the principles of seam welding | 6 |
| b. Sketch & explain the following: i) Resistance Welding ii) Projection welding. | 14 |

Unit - V

- | | |
|---|----|
| 9. a. Explain the formation of different zones during welding. | 10 |
| b. Explain the different welding defects, their causes & remedies. | 10 |
| 10. a. Explain the various regions of HAZ in low carbon steel during welding. | 10 |
| b. Write a note on shrinkage and residual stresses in welds. | 6 |
| c. Write a short note on weldability. | 4 |