



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Third Semester, B.E. - Automobile Engineering
Semester End Examination; Dec - 2016/Jan - 2017

Manufacturing Technology - 1

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

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|------|---|----|
| 1 a. | Give the broad classification of engineering manufacturing processes along with two examples for each. | 6 |
| b. | Sketch the mold showing the following and explain their function : | 10 |
| | i) Pouring basin ii) Sprue iii) Gate iv) Runner v) Riser. | |
| c. | List the different factors that are considered, while selecting a manufacturing process. Explain briefly. | 4 |
| 2 a. | Explain shrinkage, draft and distortion allowances provided to the pattern. | 10 |
| b. | List the essential properties of molding sand. Explain any six of them. | 10 |

UNIT - II

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|------|--|----|
| 3 a. | Discuss different types of binders used in molding sand. | 6 |
| b. | What are the ingredients of core sand? Explain briefly. | 8 |
| c. | With a sketch, explain the construction of a core blowing machine. | 6 |
| 4 a. | Give a step-by-step procedure for the investment casting process with suitable sketches. | 10 |
| b. | Explain with a neat sketch, horizontal centrifugal casting process. | 10 |

UNIT - III

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| 5 a. | With sketch, give the description of Cupola furnace and briefly explain its operation. | 10 |
| b. | List the advantages and disadvantages of an induction furnace. | 6 |
| c. | Write a note on crucible furnaces. | 4 |
| 6 a. | State the functions of a riser. Explain different risers with neat sketches. | 10 |
| b. | List the common defects in castings. Explain any three. | 10 |

UNIT - IV

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|------|---|----|
| 7 a. | With a neat sketch, discuss the principle and operation of TIG welding process. | 12 |
| b. | Write a note on atomic hydrogen welding process. | 8 |
| 8 a. | Explain briefly the principle of resistance welding. | 4 |
| b. | With the help of a neat sketch, explain the principle of resistance spot welding. | 10 |
| c. | What are the advantages and applications of seam resistance welding process? | 6 |

UNIT - V

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|-------|---|----|
| 9 a. | Discuss the formation of different zones in welding. | 9 |
| b. | What are the defects in welding? State the causes and the remedy. | 8 |
| c. | List the applications of brazing. | 3 |
| 10 a. | With a neat sketch, explain the working principle of ultrasonic method of NDT. List its advantages. | 12 |
| b. | With a neat sketch, discuss the radiography method of inspecting a weld. | 8 |

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