



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

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Automobile Engineering  
Semester End Examination; Dec - 2017 / Jan - 2018

## Manufacturing Technology - I

Time: 3 hrs

Max. Marks: 100

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

### UNIT-I

- |      |   |    |
|------|---|----|
| 1 a. | Discuss the factors considered while selecting a process for manufacturing. | 5  |
| b.   | Discuss desirable characteristic of materials used for making patterns.     | 5  |
| c.   | List the types of pattern and explain any three with neat sketches.         | 10 |
| 2 a. | Explain camber and shrinkage allowance provided to the pattern.             | 10 |
| b.   | Discuss the salient features of any five types of moulding sand.            | 10 |

### UNIT-II

- |      |   |    |
|------|---|----|
| 3 a. | Discuss different types of binders used in moulding sand.         | 6  |
| b.   | State and explain ingredients of core sand.                       | 8  |
| c.   | With a sketch explain the construction of a core blowing machine. | 6  |
| 4 a. | Explain with a neat sketch vertical centrifugal casting process.  | 10 |
| b.   | Explain the shell moulding process with suitable sketches.        | 10 |

### UNIT-III

- |      |   |    |
|------|---|----|
| 5 a. | Discuss Gas and moulding material defects in a casting.                                     | 6  |
| b.   | With sketch explain the construction and operation of cupola furnace.                       | 10 |
| c.   | Summarize salient features of crucible furnaces.  | 4  |
| 6 a. | State the functions of a riser. Explain different risers with neat sketches.                | 8  |
| b.   | With a neat sketch, explain pressurized gating system. List its advantages and limitations. | 7  |
| c.   | List the advantages and disadvantages of induction furnace.                                 | 5  |

### UNIT-IV

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

### UNIT-V

- |       |  |    |
|-------|--|----|
| 9 a.  | Discuss the principles of soldering.   | 4  |
| b.    | Explain the formation of different zones in welding.                         | 8  |
| c.    | Discuss the defects in welding. State their causes.                          | 8  |
| 10 a. | Explain the principle of magnetic practical inspection. List its advantages. | 10 |
| b.    | With neat sketch, discuss the X-ray radiography inspection.                  | 10 |