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## 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 - 2016/Jan - 2017

### Manufacturing Process - I

Time: 3 hrs

Max. Marks: 100

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

ii) Assume suitably missing data, if any.

#### UNIT - I

- 1 a. Explain the broad classification of manufacturing processes. 10
- b. Discuss the factors necessary for the selection of manufacturing process for a production. 10
- 2 a. What is casting? Discuss the advantages and limitations of casting. 10
- b. With a neat diagram, explain the working of cupola furnace. 10

#### UNIT - II

- 3 a. Discuss any four types of pattern allowances in brief. 10
- b. List out various types of patterns and explain any one of them in details. 10
- 4 a. Briefly explain the properties of moulding sand. 10
- b. Explain any five types of casting defects along with their causes and remedies. 10

#### UNIT - III

- 5 a. Explain the various steps of shell moulding process and list out the applications of shell moulding. 10
- b. Discuss the advantages, limitations and applications of Investment casting. 10
- 6 a. Explain the continuous casting process with neat sketch. 10
- b. Discuss the centrifugal casting process with a neat sketch. 10

#### UNIT - IV

- 7 a. Explain Atomic Hydrogen welding with a neat diagram. Also discuss the advantages and limitations of the process. 10
- b. Differentiate between TIG and MIG weldings. 10
- 8 a. What is Resistance welding? Discuss the classification of Resistance welding. 5
- b. Explain the spot welding process with a neat sketch also discuss the advantages of the process. 10
- c. With a neat sketch, explain the working principle of seam welding. 5

#### UNIT - V

- 9 a. What is Heat Affected Zone (HAZ)? Explain how type material and cooling conditions would affect HAZ? 10
- b. Discuss briefly any five factors that affect the weld ability of metals. 10
- 10a. Explain briefly few important weld ability tests. 10
- b. Discuss any five welding defects along with remedies. 10