



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; March - 2021
Manufacturing Methods

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: To discuss various manufacturing processes and to identify the types of molding and casting processes.

CO2: To identify and study different types of welding and special types of welding.

CO3: Able to explain the working principles of Lathes, planning and shaping machines. Classification of Lathes, planning and shaping machine.

CO4: Able to explain milling machines, Describe Non-traditional machining processes. Also describe various Surface finishing processes.

CO5: To discuss the application of Forging, Rolling, extraction, wire drawing spinning Powder metallurgy technique.

Note: I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any Two sub questions (from a, b, c) for Maximum of 18 marks from each unit.

| Q. No. | Questions | Marks | BLs | COs | POs |
|----------------------|--|-----------|-----|-----|-----|
| I : PART - A | | 10 | | | |
| I a. | List the desirable properties of molding sand. | 2 | | | |
| b. | What are the limitations of welding? | 2 | | | |
| c. | List the various operations performed in a centre lathe. | 2 | | | |
| d. | Give a short note on LBM. | 2 | | | |
| e. | What are the operations that are normally employed in forging? | 2 | | | |
| II : PART - B | | 90 | | | |
| UNIT - I | | 18 | | | |
| 1 a. | Define manufacturing. Classify the manufacturing process and explain. | 9 | | | |
| b. | Give a step-by-step procedure for the investment casting process with suitable sketches. | 9 | | | |
| c. | Explain various defects in casting. Also discuss their causes and remedies. | 9 | | | |
| UNIT - II | | 18 | | | |
| 2 a. | Illustrate the different types of flames established during oxy-acetylene welding process. | 9 | | | |
| b. | Explain the following with neat sketches: | | | | |
| | i) Spot Welding | 9 | | | |
| | ii) Seam Welding | 9 | | | |
| | iii) Projection welding | 9 | | | |
| c. | What is HAZ? Explain the various regions of HAZ. | 9 | | | |

UNIT - III**18**

- 3 a. How lathes are classified? Explain the work holding devices are generally used in a lathe. 9
- b. What are the different driving mechanisms of a shaper? Discuss briefly the crank and slotted link mechanism of a shaper. 9
- c. Classify grinding machines. With a neat sketch, describe the centreless grinding machine. 9

UNIT - IV**18**

- 4 a. Sketch and explain Ultra Sonic Machining (USM). Mention their applications. 9
- b. Explain the principle, operation, application, advantages and disadvantages of Laser Beam Machining (LBM) with the help of a neat sketch. 9
- c. Sketch and explain plasma arc machining. 9

UNIT - V**18**

- 5 a. What are the different types of Forging? Explain any two types of Forging with suitable sketches. 9
- b. Show by schematic sketches the process of forward and backward extrusion. Give two examples of components produced by extrusion. 9
- c. Briefly explain the powder metallurgy process with a block diagram. 9

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