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

(An Autonomous Institution affiliated to VTU, Belgaum)

**Seventh Semester, B.E. - Automobile Engineering**

**Semester End Examination; Dec. - 2015**

**Manufacture of Automobile Components**

Time: 3 hrs

Max. Marks: 100

*Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.*

## PART - A

1. a. Explain the manufacture process for pistons by gravity die casting, with a sketch. 8
- b. Write short note on upset forging of valves. 6
- c. Briefly explain piston ring manufacturing process. 6
2. a. Explain the use of fine blanking process in the manufacturing of friction plates. Mention its advantages. 8
- b. Mention the advantages and limitations of powder metallurgy. 6
- c. Write a note on gear hobbing. 6
3. a. Sketch and explain the manufacture of propeller shaft by continuous casting process. 8
- b. Write short notes on the following : 12
  - (i) Surface hardening of propeller shaft
  - (ii) Extrusion process.
4. a. Explain the forging operations which are used to manufacture front and rear axles. 8
- b. Discuss the method of manufacturing of leaf springs and coil springs. 12

## PART – B

5. a. Write short notes on: (i) Thermoforming           (ii) Hydroforming. 8
- b. Explain the construction and working of spot welding, with a sketch. 8
- c. Enlist the different types of welding processes used for welding body panels. 4
6. a. Describe the injection moulding of instrument panel, with a sketch. 8
- b. Sketch and explain hand lay up process for making composite panels. 6
- c. Write short note on moulding of bumpers. 6
7. a. Explain the manufacture of ceramic matrix piston rings. 8
- b. Discuss the significance of RPT and CNC in manufacturing engineering activities. 6
- c. Write a note on cryogenic grinding of powers. 6
8. a. Explain the method of manufacturing of tyre and tubes. 8
- b. Discuss the use of Pro - E and IDEAS packages in machining concepts. 8
- c. Write a short note on automotive coach work. 4

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