



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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

**Semester End Examination; June - 2017**

**Manufacturing of Automotive Components**

*Time: 3 hrs*

*Max. Marks: 100*

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

### UNIT - I

- |      |   |    |
|------|---|----|
| 1 a. | Explain briefly the preparation of casting for cylinder heads.    | 10 |
|      | b. Discuss briefly the machining process of engine blocks.        | 10 |
| 2 a. | Explain the procedure of casting of piston by gravity casting.    | 10 |
|      | b. Briefly explain the steps involved in upset forging of valves. | 10 |

### UNIT - II

- |      |  |    |
|------|--|----|
| 3 a. | Explain briefly the manufacture of composite friction lining in the clutch.              | 10 |
|      | b. What is gear hobbing? Discuss the manufacture of gears by gear hobbing process.       | 10 |
| 4 a. | Describe briefly the process of heat treatment and surface hardening of propeller shaft. | 10 |
|      | b. Explain briefly the composite propeller shaft manufacturing.                          | 10 |

### UNIT - III

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|------|---|----|
| 5 a. | Describe briefly the casting of rear axle casing.                     | 10 |
|      | b. Describe in brief the manufacture of composite leaf spring.        | 10 |
| 6 a. | Explain briefly the manufacturing process of Tyre and Tube.           | 10 |
|      | b. Describe in brief the procedure of manufacturing wheels and brake. | 10 |

### UNIT - IV

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|------|--|----|
| 7 a. | Explain briefly the hydro forming process for manufacture of body panels.  | 10 |
|      | b. What is the resistance welding? Discuss the application of resistance welding while manufacturing body panels.                  | 10 |
| 8 a. | What is the principle of injection moulding? Explain the procedure of manufacturing instrument panel by injection moulding method. | 10 |
|      | b. Explain hand lay-up process for making composite panels.  | 10 |

### UNIT - V

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|-------|---|----|
| 9 a.  | Discuss briefly the manufacture of engine components by chemical vapor deposition process.              | 10 |
|       | b. Explain the advanced machining process of RPT and CNC.   | 10 |
| 10 a. | Explain briefly the generation of NC codes in advanced machining process using Pro.e and Ideas package. | 10 |
|       | b. Explain with neat sketch, the laser sintering in advanced machining process.                         | 10 |