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Roll No .....

**MMAE-302(B)**

**M.E./M.Tech., III Semester**

Examination, November 2018

**Production of Automotive Components**

**(Elective - II)**

**Time : Three Hours**

**Maximum Marks : 70**

- Note:** i) Attempt any five questions.  
 ii) All questions carry equal marks.  
 iii) Draw neat diagram wherever required.

1. a) Draw and explain stress strain diagram for ductile material.  
 b) Discuss different mechanisms of strengthening in metals and alloys.
2. Explain Iron-Iron Carbide phase diagram with suitable sketch.
3. a) Discuss the effect of processing variables on powder metallurgy components.  
 b) What are the advantages, limitations and applications of powder metallurgy?
4. a) Compare injection, compression and blow moulding processes.  
 b) What are the advantages and limitations of machining plastics? Explain methods of machining plastics materials.

5. a) What materials are used in forging? Draw and explain forging process flow chart in detail.  
 b) Explain connecting rod and crankshaft manufacturing processes.
6. a) Discuss the metal extrusion step by step process and its characteristics.  
 b) Explain different types of hydro forming and discuss the process of tube hydro forming.
7. a) Explain manufacturing process of piston rings and cylinder liners.  
 b) What are the machining operations of cam shaft, pistons and piston rings?
8. a) What are the recent developments in auto body panel forming?  
 b) What are the squeeze casting advantages and disadvantages and explain manufacturing of pistons?

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