

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 4081

Roll No.

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B.Tech.

(SEM IV) EVEN SEMESTER THEORY EXAMINATION,
2009-2010

MANUFACTURING SCIENCE - I

Time : 3 Hours

Total Marks : 100

Note : (i) Answer all questions.

(ii) There are choices within, marks are indicated therein.

1. Attempt any four parts : (4x5=20)
- What do you understand by Yield Criteria ? Explain Tresca and Von Mises Yield Criterion. ✓
 - Describe Forming processes and Fabrication processes in brief.
 - Differentiate between hot working and cold working.
 - Describe Swages and Hammers as hand forging tools.
 - State the advantages and disadvantages of forging.
 - Describe Impression die forging processes.

2. Attempt any two parts : (2x10=20)
- Derive the expression for draw stress for wire drawing.
 - State the advantages, disadvantages and application of Extrusion.
 - Describe various types of rolling mills and rolling defects. ✓
3. Attempt any four parts : (4x5=20)
- Classify the presses according to drive mechanism used in presses.
 - Describe Blanking, Perforating and Lancing.
 - Describe the various methods of reducing the required cutting force in press working.
 - A cup without flanges with dia 50 mm and height 100 mm is to be drawn from 2 mm thick sheet. Determine the shell dia for various stages, assuming reduction of 45%, 25% and 20% respectively for each draw.
 - Describe combination die, and progressive die.
 - Describe bend allowance and spring back.
4. Attempt any four parts : (4x5=20)
- Describe Stanoff explosive forming. State the advantages of electrohydraulic forming process.
 - Describe the various secondary operations used in powder metallurgy.
 - Describe various locating principles.
 - Describe c-clamps and quick acting nut.
 - Describe compression moulding and hot platen welding.
 - Write short note on Adhesives.

5. Attempt any four parts : (4x5=20)

- (a) Describe Loose piece pattern and Match plate pattern with figures.
- (b) Describe the various properties, which a moulding sand should possess.
- (c) A mould $90\text{ cm} \times 45\text{ cm} \times 21\text{ cm}$ is to be filled by liquid metal during casting process. Determine the time taken to fill up the mould using
 - (i) Top gating system.
 - (ii) Bottom gating system.The cross sectional area of gate is 9 cm^2 .
- (d) Describe the shell moulding process with sketches.
- (e) State the advantages, disadvantages and limitations of die casting.
- (f) Describe True Centrifugal casting process.

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