

**METAL FORMING PROCESSES**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What is theory of Plasticity?
  - (b) Write the difference between engineering Strain and True strain.
  - (c) What is thread Rolling?
  - (d) Write the formula to calculate Forging force.
  - (e) Mention any two advantages of Cold Extrusion.
  - (f) Name the die materials which are used for Drawing operation.
  - (g) Define Spinning operation.
  - (h) What is bend allowance?
  - (i) Define Thermoforming process.
  - (j) Write the types of Rapid prototyping processes.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 Write the differences between Hot working and Cold working processes.

**OR**

- 3 Write a note on recovery, re crystallisation and grain growth.

**UNIT – II**

- 4 Write a note on Rolling stand arrangements in a Rolling operation.

**OR**

- 5 Enumerate the various types of Forging defects that occur in Forging operation.

**UNIT – III**

- 6 Describe the process of Hydrostatic extrusion with a neat sketch.

**OR**

- 7 Explain the Wire drawing operation with a schematic diagram.

**UNIT – IV**

- 8 A hole 100 mm diameter is to be punched in a steel plate of 6 mm thick. The material is cold rolled C40 steel for which the maximum shear strength can be taken as 550 MPa. With normal clearance on the tools, cutting is complete at 40% penetration of the punch. Give suitable diameters for the punch and die, and shear angle on the punch in order to bring the work within the capacity of a 200 kN press available in the shop.

**OR**

- 9 Write a note on the following operations which are carried out in sheet metal work:

- (a) Stretch forming.
- (b) Embossing.

**UNIT – V**

- 10 Explain the Transfer moulding process in detail.

**OR**

- 11 What do you understand about the Stereolithography technique, explain the technique with a neat sketch?

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