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

(An Autonomous Institution affiliated to VTU, Belgaum)

Sixth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; June/July - 2015

### Theory of Metal Forming

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. Sketch and explain the Idealized flow curves. 10
  - b. Discuss about the Von Mises' criterion. 10
- 2 a. Briefly explain the following:
  - i) Direct – compression – type processes. 12
  - ii) Indirect – compression – type processes
  - iii) Tension type processes
  - b. Draw and explain the Graphs of typical variation of strength and ductility in cold-work-anneal cycle. 8
- 3 a. Sketch and explain the flow diagram for computer – aided design and computer aided manufacturing systems applied to closed – die forging. 10
  - b. Sketch and explain the typical forging defects. 10
- 4 a. Write a note on the following rolls for rolling mills.
  - i) Three high 12
  - ii) Four high
  - b. Distinguish clearly between the Hot – Rolling and Cold – Rolling. 8

#### PART - B

- 5 a. Distinguish clearly between the flat faced die and conical die. 8
  - b. Sketch the Hydrostatic extrusion. State its concept advantages and disadvantages. 12
6. a Draw the graph of components of total energy of deformation with reference to the drawing process. Explain it. 8
  - b. Describe the various methods of tube drawing. 12
- 7 a. Discuss about the following:
  - i) Progressive forming 12
  - ii) Spinning processes
  - b. What is spring back in Bending? Explain briefly. 8
- 8 a. With the help of figure explain the Rubber forming. 10
  - b. What do you mean by Explosive forming? State its advantages and disadvantages. 10