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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

Semester End Examination; May/ June - 2019

Theory of Metal Forming

Time: 3 hrs

Max. Marks: 100

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

UNIT - I

- 1 a. Define Forming process. Explain the classification of Forming process. 12
- b. Explain the effect of temperature in metal working process. 8
2. Write a note on following: 20
- i) Metallurgical structure
- ii) Effect of lubrication on metal working
- iii) warm working process

UNIT - II

- 3 a. With a neat sketch, explain the working principle of closed die forging process. 10
- b. With a neat sketch, explain different types of forging operations. 10
- 4 a. With a neat sketch, explain any three types of rolling mills. 18
- b. List the defects in rolled products. 2

UNIT - III

- 5 a. With a neat sketch, explain direct extrusion process. 8
- b. With a neat sketch, explain the different methods used to produce seamless pipe and tubes. 12
- 6 a. With a neat sketch, explain rod drawing process. 7
- b. With a neat sketch, explain the parts of drawing dies. 8
- c. List the advantages and disadvantages of drawing process. 5

UNIT - IV

- 7 a. With a neat sketch, explain progressive forming method. 8
- b. With a neat sketch, explain the shearing process. 8
- c. Write a note on drawing defects. 4
8. Write a note on the following : 20
- i) Bending process ii) Stretch forming iii) Redrawing and reverse Drawing process

UNIT - V

9. With a neat sketch, explain the working principle of following: 20
- i) Explosive forming process ii) Electro discharge process iii) Electromagnetic process
- 10 a. With a neat sketch, explain the steps of powder metallurgy techniques. 10
- b. List the advantages and disadvantages of powder metallurgy process. 5
- c. Differentiate between HERF and Powder metallurgy process. 5