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

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Manufacturing Process - III

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Assume suitably missing data, if any.

UNIT - I

1 a. With neat sketches, explain the classification of metal working process based on the nature of force applied. 10

b. State the advantages and limitations of metal working processes. 10

2 a. Discuss :
Tresca's yield criterion and Von mises yield criterion. 10

b. Explain the effect of the following on metal working process :
i) Friction
ii) Hydrostatic pressure. 10

UNIT - II

3 a. List the classification of forging machines. Describe the working of Hydraulic press with a neat sketch. 12

b. Explain Tandem mill and Planetary-rolling mill with the help of neat sketches. 8

4 a. Deduce the expression for forging pressure and load in open die forging by slab analysis. 10

b. With neat sketches, explain hot rolling and cold rolling. 6

c. In a rolling a slab from 35 mm to 30 mm, determine the co-efficient of friction and the length of arc of contact. Take the value of roll radius as 250 mm. 4

UNIT - III

5 a. With suitable sketches, explain the working of the following :
i) Hydrostatic extrusion
ii) Seamless tube extrusion. 12

b. Discuss optimal die angle and dead zone formation in drawing. 8

6 a. Explain the variables influencing extrusion process. 10

b. Write a note on estimation of redundant work in drawing. 6

c. Calculate the drawing stress and reduction in area neglecting friction between the rod and the dies. The diameter before and after drawing are 6.25 mm and 5.60 mm respectively and yield stress of rod material is 35 N/mm^2. 4

Contd….2

UNIT - IV

7 a.	With neat sketches, explain the working of progressive and compound die arrangement in sheet metal working.	12
b.	Explain for defects in deep drawing.	8
8 a.	Sketch and explain the working of open back inclinable press.	10
b.	With the help of Forming limit diagram describe the forming limit criterion.	10

UNIT - V

9 a.	Explain the basic steps of powder metallurgy.	10
b.	Describe five important characteristics of metal powder.	10
10 a.	Explain two methods of powder production.	8
b.	Discuss sintering mechanism.	6
c.	Describe the types of plastics.	6

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