

MANUFACTURING PROCESS – III

Written by Administrator
Wednesday, 04 November 2009 07:23 -

Subject Code

:

06ME73

IA Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

MANUFACTURING PROCESS – III

Written by Administrator
Wednesday, 04 November 2009 07:23 -

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

Unit - 1

Introduction and Concepts: Classification of metal working processes, characteristics of wrought products, advantages and limitations of metal working processes. Concepts of true stress, true strain, triaxial & biaxial stresses. Determination of flow stress. Principal stresses, Tresca & Von-Mises yield criteria, concepts of plane stress & plane strain.

7 Hours

Unit - 2

Effects of parameters: Temperature, strain rate, friction and lubrication, hydrostatic pressure in metalworking, Deformation zone geometry, workability of materials, Residual stresses in wrought products.

6 Hours

Unit - 3

Forging: Classification of forging processes. Forging machines & equipment. Expressions for forging pressures & load in open die forging and closed die forging by slab analysis, concepts of friction hill and factors affecting it. Die-design parameters. Material flow lines in forging. Forging defects, Residual stresses in forging. Simple problems.

MANUFACTURING PROCESS – III

Written by Administrator
Wednesday, 04 November 2009 07:23 -

7 Hours

Unit - 4

Rolling: Classification of Rolling processes. Types of rolling mills, expression for Rolling load. Roll separating force. Frictional losses in bearing etc, power required in rolling, Effects of front & back tensions, friction, friction hill. Maximum possible reduction. Defects in rolled products. Rolling variables, simple problems.

6 Hours

PART - B

Unit - 5

Drawing: Drawing equipment & dies, expression for drawing load by slab analysis, power requirement. Redundant work and its estimation, optimal cone angle & dead zone formation, drawing variables, Tube drawing, classification of tube drawing, simple problems.

7 Hours

Unit - 6

Extrusion: Types of extrusion processes, extrusion equipment & dies, deformation, lubrication & defects in extrusion. Extrusion dies, Extrusion of seamless tubes. Extrusion variables, simple problem

6 Hours

Unit - 7

Sheet & metal forming: Forming methods, dies & punches, progressive die, compound die, combination die. Rubber forming. Open back inclinable press (OBI press), piercing, blanking, bending, deep drawing, LDR in drawing, Forming limit criterion, defects of drawn products, stretch forming. Roll bending & contouring, Simple problems

6 Hours

Unit - 8

High Energy Rate forming Methods: Principles, advantages and applications, explosive forming, electro hydraulic forming, Electromagnetic forming.

Powder metallurgy: Basic steps in Powder metallurgy brief description of methods of production of metal powders, conditioning and blending powders, compaction and sintering application of powder metallurgy components, advantages and limitations.

7 Hours

TEXT BOOKS:

1. **Mechanical metallurgy (SI units)**, by G.E. Dieter, Mc Graw Hill pub.2001
2. **Manufacturing Engineering and Technology** by Serope Kalpakjian and Stevan R.

REFERENCE BOOKS:

1. **Materials and Processes in Manufacturing** by E.paul, Degramo, J.T. Black, Ronald, A.K. Prentice -hall of India 2002
2. **Principles of Industrial metal working process** - G.W. Rowe, CBSpub. 2002

MANUFACTURING PROCESS – III

Written by Administrator

Wednesday, 04 November 2009 07:23 -

3. **Manufacturing Science**, by Amitabha Ghosh & A.K. Malik - East -Westpress 2001

4. **Theory of plasticity by Dr. Sadhu Sing**