

AMPR15 METAL FORMING TECHNOLOGY

UNIT-1 FORGING AND ROLLING

- 1.1 Principle- classification- equipment- tooling- processes parameters and calculation of forces during forging and rolling processes
- 1.2 Ring compression test- Post forming heat treatment- defects (causes and remedies)- applications- Roll forming.

UNIT-2 EXTRUSION AND DRAWING PROCESSES

- 2.1 Classification of extrusion processes- tool, equipment and principle of these processes- influence of friction- extrusion force calculation – defects (causes and remedies)
- 2.2 Rod/Wire drawing- tool, equipment and principle of processes- defects- Tube drawing and sinking processes -Mannesmann process of seamless pipe manufacturing- Tube bending.

UNIT-3 RECENT ADVANCES

- 3.1 Super plastic forming- Electro forming- fine blanking- Hydro forming- Peen forming- Laser Forming- Micro forming
- 3.2 P/M forging- Isothermal forging- high speed hot forging- near net shape forming high velocity extrusion- CAD and CAM in forming.

References Books:

1. Serope Kalpakjian, Steven R Schmid, Manufacturing Process for Engineering Materials, 4th Edition, Pearson Education, 2003.
2. Rao, P.N. Manufacturing Technology, TMH Ltd., 2003
3. Edward M.Mielink, Metal working Science Engineering”, McGraw Hill, Inc, 2000.
4. Metal Handbook Vol.14, Forming and Forging, Metal Park, Ohio, USA, 1990