

SECTION – 3

QUESTION-1.

ANSWER:-

Shearing and Forming in Manufacturing:-

Shearing:-

Shearing is a cutting operation used to remove a blank of required dimensions from a large sheet. To understand the shearing mechanism, consider a metal being sheared between a punch and a die, Typical features of the sheet and the slug are also shown in this figure. As can be seen that cut edges are neither smooth nor perpendicular to the plane of the sheet.

Forming:-

Forming is a mechanical process used in manufacturing industries wherein materials (mostly metals) undergo plastic deformations and acquire required shapes and sizes by application of suitable stresses such as compression, shear and tension. In the forming process, no material is removed; it is completely displaced and deformed into the required shape. Some of the commonly used forming processes in the manufacturing industry are:

Forging

Rolling

Extrusion

Thread rolling

Rotary swaging

Explosive forming

Electromagnetic forming

Joining:-

joining is one of the manufacturing processes by which two or more materials can be permanently or temporarily joined or assembled together with or without the application of external element in order to form a single unit. Now-a-days a large variety of such joining techniques are available to cater the need of assembling a wide variety of materials in various ways for various processing or applications. Some of the commonly used joining processes are enlisted below.

Welding

Soldering

Brazing

Fasteners (including nut-bolt, nail, hook, clip, clutch, button, zipper, etc.)

Adhesive bonding

Resin bonding

Cotter joint

Knuckle joint, etc.