

College of Engineering, Pune
(An Autonomous Institute of Government of Maharashtra)
End Semester Examination
(MT207) PRINCIPLES OF METAL WORKING
SEMESTER-II

Year: S.Y.B-Tech
Academic Year: 2011-12
Duration: 3 hrs.

Branch: Metallurgy
Date: May 09, 2012
Max. Marks: 50

Instruction to candidates:

1. All questions are compulsory.
2. Neat Diagrams must be drawn wherever necessary.
3. Assume suitable data, if necessary.

- Q.1** **A** At a point in a body subjected to two mutually perpendicular stresses are 80 N/mm² tensile and 40 N/mm² tensile. Each of the above stresses are accompanied by a shear stress of 60 N/mm² (clockwise). Determine the normal stress, shear stress and resultant stress on an oblique plane inclined at an angle of 45° with the axis of minor tensile stress. [6]
- B** A water main 80 cm diameter contains water at a pressure head of 100 m. If the weight density of water is 9810 N/m³. Find the thickness of the metal required for the water main. Given: Permissible stress as 20 N/mm². [4]
- Q.2** **A.** Draw the self explanatory sketch of cluster mill. State its advantages over two high rolling mill [2]
- B.** A sheet of brass is cold rolled with reduction of 35% to 1.50mm. It is then further cold rolled to 1.25 mm. Calculate the total percentage reduction and the value of draft at the first rolling pass. [3]
- C.** With the help of neat flow chart, arrange the different products of rolling process with decreasing dimensions. [5]
- Q.3** **A.** Explain in detail, forging technique used for production of connecting rod. [5]
- B.** With the help of neat sketch, enlist the various types of defects present in forged and extruded component. Also state their causes and remedies. [5]
(Write your answer in tabular form.)
- Q.4** Differentiate between [10]
- i. Cold working and hot working
- ii. Direct extrusion and indirect extrusion
- Q.5** Write a note on (any two): [10]
- i. Sheet metal forming
- ii. Yielding criterion
- iii. Wire drawing
