

IV B.Tech I Semester Supplementary Examinations, April/May 2005
PRODUCTION TECHNOLOGY-III
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain what do you understand by the following terms:
 - i. Ingot
 - ii. Slab
 - iii. Bloom
 - iv. Billet(b) Name the process of manufacture of the following articles.
 - i. Steel sections
 - ii. Tooth paste tubes
 - iii. Long wires
 - iv. Hand tools like spanner
2. (a) Describe the difference between a compound die and progressive die.
(b) What is stretch forming? Explain its necessities with a neat sketch.
3. (a) Determine the workload and frictional power loss for simple forward extrusion with a flat face die
(b) Calculate the force required in extruding copper at 700°C if the billet diameter is 100 mm and the extrusion ratio is 20.
4. (a) Derive an expression for the total forging force in forging of strip.
(b) A strip of size 24 x 24 x 200 mm is to be forged four times, keeping length constant. Determine the forging force, taking coefficient of friction between strip and die as 0.25. Average yield stress of strip in tension is 7 N/mm^2 .
5. (a) Define the terms
 - i. Tolerance
 - ii. Allowance
 - iii. Fit(b) With the help of neat sketches, explain the 3 basic types of fits.
Give at least Two examples for each type of fit. A 40mm diameter shaft is made to rotate in the bush. The tolerance for both the bush and shaft are 0.05mm. Determine the dimension of the shaft and the bush to give an allowance of 0.075mm with the hole basis system.
6. (a) With the help of sketches explain the working of an external micrometer.

- (b) Discuss the function of ratchet drive in case of a micrometer.
 - (c) Describe a differential screw micrometer.
7. (a) Differentiate between primary texture and secondary texture.
- (b) The successive heights of 18 peaks and troughs in the measurement of surface roughness, measured from a datum are 42,26,38,30,15,30,45,24,33,18,38,28,42,32,20,48,52,34 microns. These measurements are obtained over a length of 18mm, determine the R_a and RMS value of the rough surface.
8. The operation of a pressure type pneumatic comparator is represented by the equation: $p/P = -0.5(M/C) + 1.1$ for $0.6 > (p/P) > 0.8$ (where p =pressure between the two orifices, P =operating pressure, M = effective area of measuring orifice, C = geometric area of the control orifice) The control orifice is 0.5 mm diameter and the measuring orifice is a 1 mm diameter hole. Find:
- (a) the range of linear measurement,
 - (b) the pneumatic sensitivity of the back pressure gauge for a supply pressure of 200 KN/m² gauge pressure
