① Rolling:

A 600 mm wide and 12 mm Thick strip is hot rolled to 9 mm thickness at 1000°c by using 500 mm dia of rolls at a speed of 5 m/sec. Determine the height at neutral section. Consider $\mu = 0.1$, mean yield stress is 25 Kgf/mm².

② Drawing:

A wire of 4 mm diameter is drawn to 3 mm diameter through a die of 8° semi-die angle. Determine the drawing stress. consider, $\mu = 0.06$, mean yield stress is 250 N/mm² and the length of land portion in conical die is 2.4 mm.

③ Tube drawing:

In a tube sinking process a steel tube of 20 mm outer diameter and 2 mm thick is reduced to 16 mm outer diameter. There is no change in thickness. The semi-die angle is 8°, $\mu = 0.1$, and average yield strength is 300 N/mm determine drawing stress.

④ Forging:

A circular disc of 120 mm diameter and 64 mm height is forged at room temperature between two flat dies to 36 mm height. Determine the die-load at the end of compression using slab analysis. The yield stress is given as, ~~$\sigma = 15(0.01$~~ $\sigma = 15(0.01+\epsilon)^{0.49}$ Kgf/mm², $\mu = 0.05$. ~~Determine~~