

## ASSIGNMENT: 5

1. A speed gearbox for a head stock of a lathe machine is to give speed variation from 125 rpm to 1500 rpm in 12 steps. The power is supplied to the input shaft by an electric motor of 5 kW running at 1500 rpm, through a belt drive, giving speed reduction 1.2:1. Find the speed steps arranged in geometric progression. Draw the structural diagram, Ray diagram and speed charts.
2. What are the basic considerations in design of multi speed gearbox?
3. Which conditions should be satisfied by optimum structure diagram of multi speed gear box?
4. Explain what is structural diagram and method of drawing structural diagram of gear box.
5. Design a suitable speed gear box for a head stock of a lathe that has a variation of speed from 105 rpm to 690 rpm in 09 steps. The power is supplied by an electric motor of 10 kw capacity running at 1000 rpm and driving the input shaft through a V belt drive having a speed reduction of 2:1. Draw the structural diagram, speed chart and determine the number of teeth on each gear.

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