Tutorial # 1

1- A 15-tooth spur pinion has a module of 3 mm and runs at a speed of 1600 rpm. The driven gear has 60 teeth. Find the speed of the driven gear, the circular pitch, and the theoretical center-to-center distance.

2- A spur gear-set has a module of 4 mm and a velocity ratio of 2.8. The pinion has 20 teeth. Find the number of teeth on the driven gear, the pitch diameters, and the theoretical center-to-center distance.

3- Shaft **a** shown in figure 1-1 has a power input of 75 kW at a speed of 1800 rev/min in the counterclockwise direction. The gears have a module of 5 mm and a 20° pressure angle. Gear **3** is an idler one. Gears **2**, **3** and **4** has 17 T, 34 T and 51 T respectively.
a) Find the force that gear **3** exerts against shaft **b** (F3b).
b) Find the torque that gear **4** exerts on shaft **c** (T4c).

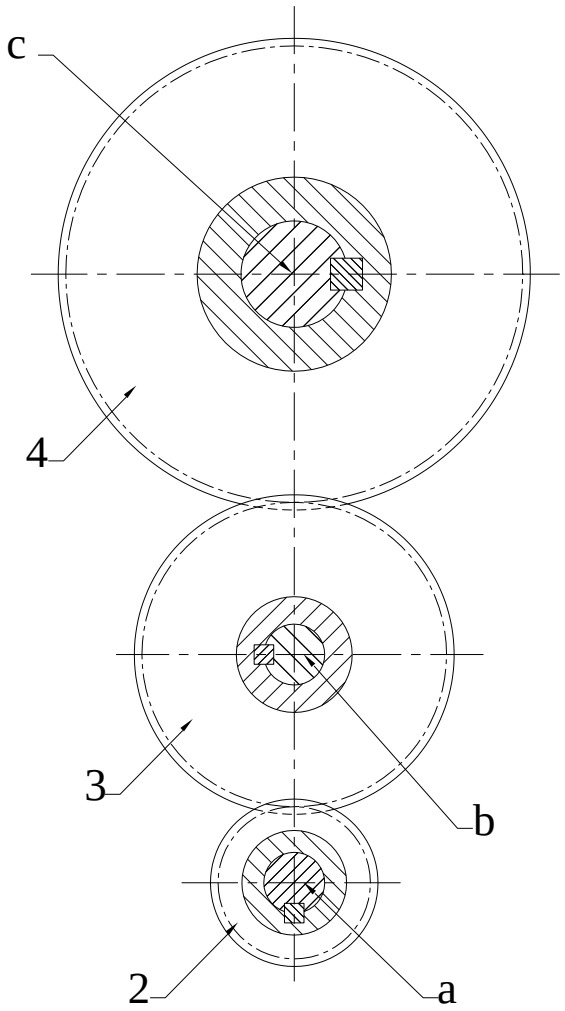

Figure 1-1