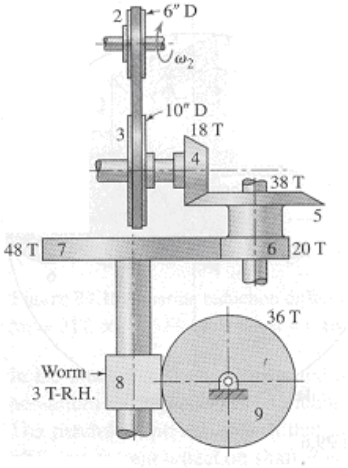
CONCORDIA UNIVERSITY
Faculty of Engineering and Computer Science
Department of Mechanical and Industrial Engineering

MECH 343/2 X: Theory of Machines 1, Winter 2011-12

Assignment 8:

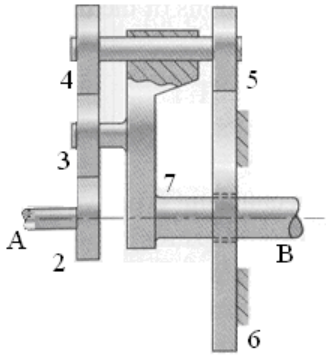
Question 1:

Pulley 2 of the V-belt drives the gear train consisting of a bevel gear, spur gear and a worm and wheel. The speed of pulley 2 is 1200 RPM in the clockwise sense when viewed from right. Determine the speed and sense of rotation of the output gear 9.



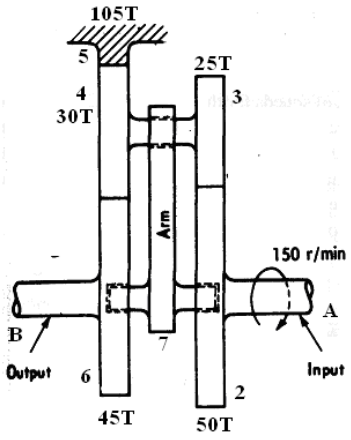
Question 2:

Shaft B connected to gear 2 drives the epicyclic gear train at 1000 rpm in the clockwise sense when viewed from left. Shaft A connected to arm is the output. Gear 6 is fixed. The numbers of teeth in the respective gears are N_2 = 12T, N_3 = 18T, N_4 = 20T, N_5 = 20T and N_6 = 48T. Determine the speed and sense of rotation of the output shaft, when viewed from right.
Note: Solve the problem using the analytical (relative velocity) method and the tabulation method



Question 3:

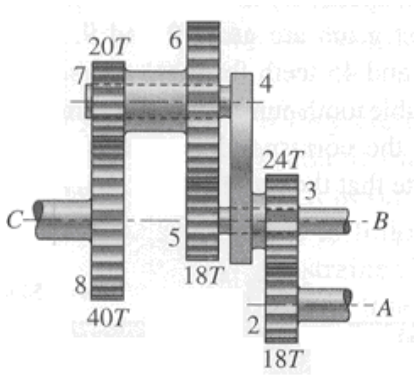
Shaft A connected to gear 2 drives the epicyclic gear train at 150 rpm in the clockwise sense, when viewed from right. Annular gear 5 is kept stationary and the arm 7 is allowed to turn freely. Determine the speed and the sense of rotation ot the output shaft when viewed from left.
Note: Solve the problem using the analytical (relative velocity) method and the tabulation method



Question 4:

Gear 2 attached to shaft A dives the epicyclic gear train at 800 rpm in the clockwise sense, when viewed from right. Shaft C is kept stationary. If all gears of this mesh have the same module, calculate the number of teeth on gear 6. Determine the speed and the sense of rotation of the output shaft B.

Note: Solve the problem using the analytical (relative velocity) method and the tabulation method



Question 5:

Shaft A is the drives the a reduction gear unit at 800 rpm in the clockwise sense, when viewed from left. The numbers of teeth in the respective gears are: N_2 = 36T, N_3 = 21T and N_4 = 52T. Gear 4 is kept stationary. Determine the speed of the output shaft B and its sense of rotation, when viewed from right.

Note: Solve the problem using the analytical (relative velocity) method and the tabulation method