TVET INSTITUTE (Graduate program Manufacturing Technology)

ACADEMIC YEAR – 2016 E.C. / 2023-24 G.C.

Year M. Sc. II Year   Course: Design of Machine tools   (MAT611)
Assignment I   (Sec I & II)   Date: Dec 23, 2023
Date of submission: 06 Jan, 2024   [Max Marks 10*2=20]

(for odd number groups-G1, G3, G5, and so on)

Q1. Design a 6 speed gear box for { (2(X1) 3(X2)}. Find ϕ value based on transmission ratio. Minimum speed may be close to 60 rpm and maximum rpm 2000 rpm.
Find speeds and standard ϕ value for the best structure among {2(X1) 3(X2), and 2(X2) 3(X1)} structure.
Show the kinamatic layout of gear box.
Calculate the number of teeth of all the gears required. Take motor rpm as n4 rpm.

Q2. The gear box designed above is used to transmit 10KW power. Find the dimensions of shaft diamter and each gear and shaft to shaft center distance. The blank material of gear is alloy steel. Take λ =10.

(for even number groups-G2, G4, G6, and so on)

Q1. Design a 6 speed gear box for { (3(X1) 2(X2)}. Find ϕ value based on transmission ratio. Minimum speed may be close to 60 rpm and maximum rpm 2000 rpm.
Find speeds and standard ϕ value for the best structure among {2(X1) 3(X2), and 2(X2) 3(X1)} structure.
Show the kinamatic layout of gear box.
Calculate the number of teeth of all the gears required. Take motor rpm as n3 rpm.

Q2. The gear box designed above is used to transmit 8KW power. Find the dimensions of shaft diamter and each gear and shaft to shaft center distance. The blank material of gear is high carbon steel. Take λ =12.