

School of University Polytechnic

Diploma in Mechanical Engineering
Semester End Examination - Nov 2023

Duration : 180 Minutes
Max Marks : 100

Sem V - N1DL504C - Theory of Machine

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Define inversion of mechanism. K1 (2)
- 2) Explain the concept of "friction wheels" and their applications. K2 (4)
- 3) Explain the concept of "follower displacement diagram" and its significance. K2 (6)
- 4) Investigate the application and working of the "Oldham coupling." K3 (9)
- 5) State and prove the law of gearing. Show that involute profile satisfies the conditions for correct gearing. K3 (9)
- 6) Evaluate the mobility of a mechanism with a given number of links and joints. K5 (10)
- 7) Compare the "Davis steering gear" and the "Ackerman steering gear." K4 (12)
- 8) Locate all the instantaneous centres of the slider crank mechanism as shown in fig. The lengths of crank OB and connecting rod AB are 100mm and 400 mm respectively. If the crank rotates clockwise with an angular velocity of 10 rad/s, find: 1. Velocity of the slider A, and 2. Angular velocity of the connecting rod AB. K5 (15)

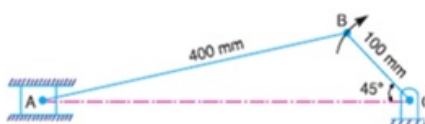


Fig.(1)

- 9) Evaluate the effect of link length and angular velocity on the "velocity of a point" in a four-bar linkage. K5 (15)
- 10) Create a kinematic pair using two links with specific degrees of freedom. K6 (18)