

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
Diploma Engineering, Mid semester Examination

Semester: 3**Subject Code: 03613203****Subject Name: Mechanisms for Machines and Aircrafts****Date: (08/08/2022)****Time: (1hr: 30min)****Total Marks: 40****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

- Q.1 Answer any six out of Ten. (2 Marks Each) (12)**
1. Define Kinematics and Dynamics.
 2. Define Theory of Machine.
 3. Define Kinetics and Statics.
 4. Define Kinematic link and give its example.
 5. Define Completely and Incompletely constraint motion.
 6. Define angular velocity and linear velocity.
 7. Give relation between linear acceleration and angular acceleration.
 8. Give relation between linear acceleration and angular velocity.
 9. Define Mechanism and give its example.
 10. Define Inversion and give its example.
- Q.2 A) Explain Sub Divisions of Theory of Machines. (03)**
- OR**
- A) Explain double slider crank chain with neat diagram. (03)
- B) Explain single slider crank chain with neat diagram. (03)
- OR**
- B) Explain four bar chain with neat diagram (03)
- C) What do you mean by Kinematic pair? Give its classification based on type of contact between the elements. (04)
- OR**
- C) Give classification of Kinematic pair based on type of relative motion between the elements. (04)
- D) In a four bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is 40 mm long and rotates at 120 r.p.m. clockwise, while the link CD = 80 mm oscillates about D. BC and AD are of equal length. Find the angular velocity of link CD when angle BAD = 60°. (04)
- Q.3 A) Enlist the inversion of Single Slider Crank Chain. (03)**
- B) Enlist the inversion of Four bar chain. (03)
- C) Explain Types of Constraint Motion with figure. (04)
- D) The crank of a slider crank mechanism rotates clockwise at a constant speed of 300 r.p.m. The Crank is 150 mm and the connecting rod is 600 mm long. Determine : 1. Linear velocity of the Midpoint of the connecting rod, and 2. angular velocity and of the connecting rod, at a crank Angle of 45° from inner dead center position. (04)