**LOK NAYAK JAIPRAKASH INSTITUTE OF TECHNOLOGY CHAPRA, BIHAR**

**(**Established under AICET Act, \_\_\_\_\_)

**Department of Mechanical Engineering**

**021408 KINEMATICS OF MACHINE**

**Assignment**

1.Explain the terms: 1. Lower pair, 2. Higher pair, 3. Kinematic chain, and 4. Inversion.

2.Sketch and explain any two inversions of a double slider crank chain.

3.In a crank and slotted lever quick return mechanism, the distance between the fixed centres is 150mm and the driving crank is 75 mm long. Determine the ratio of the time taken on the cutting andreturn strokes.

4.What do you understand by the instantaneous centre of rotation (centro) in kinematic of  
machines? Answer briefly.

5.Locate all the instantaneous centres for a four bar mechanism as shown in Fig. 6.27.  
The lengths of various links are: AD = 125 mm ;A B = 62.5 mm ; BC = CD = 75 mm.  
If the link A B rotates at a uniform speed of 10 r.p.m. in the clockwise direction, find the angular  
velocity of the links BC and CD.

6.Explain how the coriolis component of acceleration arises when a point is rotating about some otherfixed point and at the same time its distance from the fixed point varies.

7.Obtain an expression for the length of a belt in 1. an open belt drive ; and 2. a cross belt drive.

8.Discuss the various types of the brakes.

9.State and prove the law of gearing. Show that involute profile satisfies the conditions for correctgearing.

10.Explain the terms: **(*i*)** Module, **(*ii*)** Pressure angle, and **(*iii*)** Addendum.

11.Two parallel shafts are to be connected by spur gearing. The approximate distance between the shaftsis 600 mm. If one shaft runs at 120 r.p.m. and the other at 360 r.p.m., find the number of teeth on eachwheel, if the module is 8 mm. Also determine the exact distance apart of the shafts.

12.Explain briefly the differences between simple, compound, and epicyclic gear trains. What are thespecial advantages of epicyclic gear trains?

13.Explain clearly the terms ‘static balancing’ and ‘dynamic balancing’. State the necessary conditionsto achieve them.

14.Explain the term height of the governor. Derive an expression for the height in the case of a Wattgovernor. What are the limitations of a Watt governor?

15.Define and explain the following terms relating to governors:  
1. Stability, 2. Sensitiveness, 3. Isochronism, and 4. Hunting.