SKILL ACTIVITY NO: 1

Date : 3/9/24

(To be filled by the Instructor)

Title : Kinematic analysis of inversion of a four-bar mechanism using ADAMS view

Skills /competenies to be acquired :

1. To perform CADmodelling in ADAMS.
2. To define various types of joint (revolues fixed sliding etc) & apply un strains appropriatey visualization.
3. To set up & run kinematic simulation focuse
4. To understand the crankshaf criteria & its
5. To identify singular configurations where the mechanicms may loose degree of freedom
6. or experience mechanical binding.
7. on position, velocity & acceleration analysis linkages.
8. simplications on behavior of different inversion's count.

Duration of activity (hours) : 1

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

The primary goal is :-

i) To perform accurate simulate of the inversions of four-bar mechanism considerting the complex dynamics & constrains.

2) To visualize the involment of link allows for better understanding & refinement of design.

3) To understanding the relative motion of links & design under various configurations.

2. Steps performed in this activity (Explain in 5 - 6 lines)

1) Making four inversion of read length which satisfies granshof criteria and for one which does not satisfies.

2) Defining connectors such as fixed or revolute beth each inversions.

3) To run & simulate & setting reqd size & time.

4) Observing the movement.

5) To plot a graph focusing on animation, velocity & acceleratron of a part & observe it accordingly.

SKILL ACTIVITY NO: 2

Date : 24/8/24

(To be filled by the Instructor)

Title : Kinematic analysis of slider crank mechanism using ADAMS view.

Skills / competenies to be acquired :

1. To perform detailed kinematic analysis on a slider crank mechanism.
2. To understand the relationship between I/P crank motion & output linear motion of slider.
3. To perform the velocity of acceleration analysis of both the cranked & the slider.
4. To extract & interupt simulation data, such as displacement velocity & acceleration graphs for each components.
5. _____
6. _____
7. _____
8. _____

Duration of activity (hours) : 1

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

The primary goal is:.

1) To analyze the displacement velocity & acceleration of each to analyze the component in slider-crank mechanism.

2) To visualize the movement of links allow for better understanding & refinement of design.

2. Steps performed in this activity (Explain in 5 - 6 lines)

1) Make a slider crank mechanism of read length on software.

2) Defining connectors such as fixed, sliding Granslation or revolve between the inversion.

3) Run & simulate & set read step size.

4) Observe the mechanism.

5) Plot a graph focusing on animation, velocity & acceleration.

SKILL ACTIVITY NO: 3

Date : 1/10/24

(To be filled by the Instructor)

Title : Kinematic analysis of crank and slotted lever Quick return motion mechanism using ADAMS view.

Skills / competenies to be acquired :

1. To perform detailed Kinematic analysis
2. To understand the working principle
3. To setup simulation, define joints, constraints
4. To identify singular configuration where the mechanism may loose degree of freedom or experience mechanical binding.
5. Of mechanims including calculations displacement velocity & acceleration
6. of crank & slotted lever mechanism.
7. & motion driverse for the mechanism.
8.

Duration of activity (hours) : 2

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

The Kinematic analysis of crank & slotted lever Quick return motion mechanism using ADAMS view is conducted to understand & analyze the motion characteristics of this widely used mechanism in various machine tools such as shapers & slotters. The primary goal is to analyze the displacement, velocity & acceleration of different links of mechanism. To study the quick return feature of mechanism where return stroke is faster than the forward stroke, optimizing the working cycle of the machine.

2. Steps performed in this activity (Explain in 5 - 6 lines)

1) Make a crank slotted mechanism of required length.
2) Defining connectors for 2 sliders as well as between the links & one fixed link
3) Run & simulate and set required step size.
4) Observe the mechanism.
5) Plot a graph focuses on animation, one for acceleration of ram & one velocity of the ram, second graph focusing on acceleration and velocity of the crank.

SKILL ACTIVITY NO: 4

Date : 14/10/24

(To be filled by the Instructor)

Title : Kinematics analysis of windshield of wiper mechanism using ADAMS.

Skills / competenies to be acquired :

1. To perform
2. analysis of mechanisms
3. To understand working principle
4. of wiper mechanisme and its application. To Identify Singular Config.
5. To set up Simulation, define
6. joints Constraints, motion drivers
7. for the mechanism
8.

Duration of activity (hours) : 1

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

The purpose of this activety to do kinematic analysis of wi windshield wiper mechanism using ADAMS View is Conducted to understand and analyze the motion chaxactristics, and to analyze the velocity and accelexation of diffexent links and mechanism and to identify axeas whexe the mechanism Can be optimized for better pexfoxmance, minimizing wear and and maxmimizing effiency.

2. Steps performed in this activity (Explain in 5 - 6 lines)

① Build the wind shield wiper mechanism in ADAMS Veiw
② Apply motions to the dxiving (Motex) to Simulate xealistic wipex movement.
③ Run Simulation to obtain displacement velosity and accelexation pxofile of the wipex axms and links.
④ Compaxe thexathical and Simulates xesults.

SKILL ACTIVITY NO: 5

Date : _____

(To be filled by the Instructor)

Title : Creating and analyzing a CAM & follower pair using ADAMS view.

Skills / competenies to be acquired :

1. To understand principles of CAM and
2. To gain expertise in sketching and
3. _____
4. _____
5. Follower design.
6. defining mechanical components.
7. _____
8. _____

Duration of activity (hours) : 1

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

CAM and Follower mechanism are widely used in machines to transform rotational motion into linear motion.

2. Steps performed in this activity (Explain in 5 - 6 lines)

1) Test and validate performance of CAM.
2) Test and validate performance of Follower.
3) Optimize design for smooth motion.

SKILL ACTIVITY NO: 6

Date : _____

(To be filled by the Instructor)

Title : Creating and analysing planetry gear System.

Skills / competenies to be acquired :

1. Analyze motion of planetary gear 5systems.
2. Expertise in simulating gears.
3. Able to setup varias types of joints.
4. _____
6. _____
7. _____
8. _____

Duration of activity (hours) : 1

(To be filled by the Student)

1. What is the purpose of this activity ? (Explain in 3 - 4 lines)

Kinematic analysis of planetary gear system is conducted to understand and analyze motion characteristics of the widely used mechanism in various machines.

2. Steps performed in this activity (Explain in 5 - 6 lines)

1) To analyse rotational speed and velocity of each gear.
2) Optimise gear system by adjusting parameters like gear ratio, no. of teeth or material properties to enhance performance.