



**ANDHRA LOYOLA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

(Approved by AICTE, New Delhi & Affiliated to JNTU-Kakinada)

An ISO 9001:2015 Certified Institution, A NAAC Accredited Institution

Vijayawada

**DEPARTMENT OF MECHANICAL ENGINEERING**

**LESSON PLAN**

**A.Y. : 2022-2023**

**Class : II B.Tech I Semester, Section-A**

**Subject: Kinematics of Machinery**

**Faculty: Dr.T.Subba Reddy**

**Course Objectives:**

1. To make student understand the purpose of kinematics, Kinematic joint and mechanism and to study the relative motion of parts in a machine without taking into consideration the forces involved.
2. To make student understand various mechanisms for straight line motion and their applications including steering mechanism.
3. To make student understand the velocity and acceleration concepts and the methodology using graphical methods and principles and application of four bar chain. To understand the application of slider crank mechanism etc. and study of plane motion of the body
4. To make student understand the theories involved in cams. Further the students are exposed to the applications of cams and their working principles.
5. To make student understand gears, power transmission through different types of gears including gear profiles and its efficiency.
6. To make student understand various power transmission mechanisms and methodologies and working principles. Students are exposed to merits and demerits of each drive.

### **Course Outcomes:**

Upon successful completion of this course you should be able to:

1. Understand Mechanism and Relative Motion
2. Understand Various Mechanisms
3. Understand the Velocity and Acceleration Concepts
4. Understand the Theories involved in Cams
5. Understand Gears, & Power Transmission
6. understand various power transmission mechanisms

### **LESSON PLAN - DAY WISE**

#### **Course Outcomes:**

| <b>S. No</b> | <b>Outcomes</b> | <b>Lesson Objectives</b>                                                                                                       |
|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------|
| 1            | Factual         | Students will get introduced to Kinematics of Machinery                                                                        |
| 2            | Conceptual      | To identify concepts of mathematics & Numerical methods behind and Possess a good understanding of the Kinematics of machines. |
| 3            | Procedural      | Students should be able to learn basic concepts of relative motion, etc                                                        |
| 4            | Applied         | Students can be able to get ease of understanding kinematics to solve problems                                                 |

### Schedule and Sequence: Day Plan for Lesson-1

#### Lesson: 1 Mechanisms

| Session/<br>Module/<br>Day | Topic                                            | Objectives                                                                                                 | Before Class<br>(Videos,<br>E-Books,<br>Case Studies)                                                                                                                       | In Class<br>(Activities, Quiz,<br>Solving Problems)                                                                                                                      | Post Class<br>(Assignment,<br>Discussion<br>Forum) |
|----------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 1                          | Introduction<br>to<br>Kinematics<br>of Machinery | To make the<br>student gain<br>knowledge & to<br>know the<br>Introduction to<br>Kinematics of<br>Machinery | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/><a href="https://youtu.be/MJeRFzs4oRU">https://youtu.be/MJeRFzs4oRU</a></li></ul>       | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li><li>• Student Creative<br/>Response (5 Min)</li></ul> | Queries                                            |
| 2                          | Elements or<br>Links                             | To make the<br>student gain<br>knowledge & to<br>know Elements<br>or Links                                 | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/><a href="https://youtu.be/v2-4WiSgANI">https://youtu.be/v2-4WiSgANI</a></li></ul>       | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li><li>• Student Creative<br/>Response (5 Min)</li></ul> | Queries                                            |
| 3                          | Kinematic<br>Pairs                               | To make the<br>student gain<br>knowledge & to<br>know<br>Kinematic<br>Pairs                                | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/><a href="https://youtu.be/cU1PLmkjwIg">https://youtu.be/cU1PLmkjwIg</a></li></ul>       | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li><li>• Student Creative<br/>Response (5 Min)</li></ul> | Queries                                            |
| 4                          | Constrained<br>Motion                            | To make the<br>student gain<br>knowledge & to<br>know<br>Constrained<br>Motion                             | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/><a href="https://youtu.be/tviGZaYmKkg">https://youtu.be/tviGZaYmKkg</a></li></ul>       | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li><li>• Student Creative<br/>Response (5 Min)</li></ul> | Queries                                            |
| 5                          | Grashoff's<br>law                                | To make the<br>student gain<br>knowledge & to<br>know<br>Grashoff's law                                    | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/>v<br/><a href="https://youtu.be/e1n-7Wz8dhg">https://youtu.be/e1n-7Wz8dhg</a></li></ul> | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li><li>• Student Creative<br/>Response (5 Min)</li></ul> | Queries                                            |
| 6                          | Degrees of<br>freedom                            | To make the<br>student gain<br>knowledge & to<br>know Degrees<br>of freedom                                | <ul style="list-style-type: none"><li>• Text Book</li><li>• Video<br/>links/URL<br/><a href="https://youtu.be/...">https://youtu.be/...</a></li></ul>                       | <ul style="list-style-type: none"><li>• Explanation<br/>with/without PPT<br/>(25 Min)</li><li>• Video (20 Min)</li></ul>                                                 | Queries                                            |

|    |                                           |                                                                                        |                                                                                                                                                              |                                                                                                                                                            |         |
|----|-------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|    |                                           |                                                                                        | <a href="https://u.be/eRK0Qh6QDVM">u.be/eRK0Qh6QDVM</a>                                                                                                      | <ul style="list-style-type: none"> <li>Student Creative Response (5 Min)</li> </ul>                                                                        |         |
| 7  | Kutzbach Criterion for Planar Mechanisms  | To make the student gain knowledge & to know Kutzbach Criterion for Planar Mechanisms  | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Nz7RC6H8fBU">https://youtu.be/Nz7RC6H8fBU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 8  | Grublers criterion                        | To make the student gain knowledge & to know Grublers criterion                        | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/TklUzsnuXG4">https://youtu.be/TklUzsnuXG4</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 9  | Mechanism                                 | To make the student gain knowledge & to know Mechanism                                 | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/yDEJxYGAoso">https://youtu.be/yDEJxYGAoso</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 10 | Kinematic Chain                           | To make the student gain knowledge & to know Kinematic Chain                           | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/3ogbAudtns">https://youtu.be/3ogbAudtns</a></li> </ul>   | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 11 | Inversion of Mechanism, Quadric Cycle     | To make the student gain knowledge & to know Inversion of Mechanism, Quadric Cycle     | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/3ogbAudtns">https://youtu.be/3ogbAudtns</a></li> </ul>   | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 12 | Inversions of single slider crank chains. | To make the student gain knowledge & to know Inversions of single slider crank chains. | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/3ogbAudtns">https://youtu.be/3ogbAudtns</a></li> </ul>   | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

|    |                                           |                                                                                       |                                                                                                                                                              |                                                                                                                                                            |         |
|----|-------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 13 | Inversions of double slider crank chains. | To make the student gain knowledge & to know Inversion of double slider crank chains. | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/3ogbAudtngs">https://youtu.be/3ogbAudtngs</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
|----|-------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|

### **Schedule and Sequence: Day Plan for Lesson-2**

#### **Lesson: 2 Lower Pair Mechanism**

| Session/<br>Module/<br>Day | Topic                                                         | Objectives                                                                                                 | Before Class<br>(Videos,<br>E-Books,<br>Case Studies)                                                                                                                                                                                         | In Class<br>(Activities, Quiz,<br>Solving Problems)                                                                                                        | Post Class<br>(Assignment,<br>Discussion<br>Forum) |
|----------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 14                         | Introduction to Lower Pair Mechanism                          | To make the student gain knowledge & to know Lower Pair Mechanism                                          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/s_vXS_CZMQWQ">https://youtu.be/s_vXS_CZMQWQ</a></li> </ul>                                                                                | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |
| 15                         | Exact and approximate copiers and generated types, Pantograph | To make the student gain knowledge & to know Exact and approximate copiers and generated types, Pantograph | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/14gy5lHL77k">https://youtu.be/14gy5lHL77k</a></li> <li><a href="https://youtu.be/zyehFQQbkp0">https://youtu.be/zyehFQQbkp0</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |
| 16                         | Exact Straight Line Mechanisms                                | To make the student gain knowledge & to know Exact Straight Line Mechanisms                                | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/-2rH37iv_4">https://youtu.be/-2rH37iv_4</a></li> </ul>                                                                                    | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |
| 17                         | Approximate Straight Line Mechanisms                          | To make the student gain knowledge & to know Approximate Straight Line Mechanisms                          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/-2rH37iv_4">https://youtu.be/-2rH37iv_4</a></li> </ul>                                                                                    | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |

|    |                                 |                                                                              |                                                                                                                                                                                              |                                                                                                                                                                  |         |
|----|---------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 18 | Conditions for correct steering | To make the student gain knowledge & to know Conditions for correct steering | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/qQkszLYPjm4">https://youtu.be/qQkszLYPjm4</a></li> </ul>                             | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |
| 19 | Davis Steering gear             | To make the student gain knowledge & to know Davis Steering gear             | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/FexZq_w9mZo">https://youtu.be/FexZq_w9mZo</a></li> </ul>                             | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |
| 20 | Ackermans steering gear         | To make the student gain knowledge & to know Ackermans steering gear         | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/FexZq_w9mZo">https://youtu.be/FexZq_w9mZo</a></li> </ul>                             | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |
| 21 | Hooke's Joint                   | To make the student gain knowledge & to know Hooke's Joint                   | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/LCMZz6YhbOQ">https://youtu.be/LCMZz6YhbOQ</a></li> </ul>                             | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |
| 22 | Problems on Hooke's Joint       | To make the student gain knowledge & to know Problems on Hooke's Joint       | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/LCMZz6YhbOQ">https://youtu.be/LCMZz6YhbOQ</a></li> </ul>                             | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |
| 23 | Universal Coupling              | To make the student gain knowledge & to know Universal Coupling              | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://www.youtube.com/watch?v=CZiIFRCmBg">https://www.youtube.com/watch?v=CZiIFRCmBg</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | Queries |

|    |                    |                                                                 |                                                                                                                                                                                            |                                                                                                                                                            |         |
|----|--------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 24 | Universal Coupling | To make the student gain knowledge & to know Universal Coupling | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video <a href="https://www.youtube.com/watch?v=CZiIFiRCmBg">links/URL https://www.youtube.com/watch?v=CZiIFiRCmBg</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
|----|--------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|

### Schedule and Sequence: Day Plan for Lesson-3

#### Lesson: 3 Kinematics & Plane Body Motion

| Session/<br>Module/<br>Day | Topic                                                 | Objectives                                                                                         | Before Class<br>(Videos,<br>E-Books,<br>Case Studies)                                                                                                        | In Class<br>(Activities, Quiz,<br>Solving Problems)                                                                                                        | Post Class<br>(Assignment,<br>Discussion<br>Forum) |
|----------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 25                         | Introduction to Kinematics & Plane Body Motion        | To make the student gain knowledge & to know Kinematics & Plane Body Motion                        | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |
| 26                         | Relative Velocity Method - Four Bar Chain             | To make the student gain knowledge & to know Relative Velocity Method - Four Bar Chain             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/dT-0HzgmudU">https://youtu.be/dT-0HzgmudU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |
| 27                         | Problems on Relative Velocity Method - Four Bar Chain | To make the student gain knowledge & to know Problems on Relative Velocity Method - Four Bar Chain | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/dT-0HzgmudU">https://youtu.be/dT-0HzgmudU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                            |

|    |                                                                  |                                                                                                               |                                                                                                                                                              |                                                                                                                                                            |         |
|----|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 28 | Relative Velocity Method – Single slider crank chain             | To make the student gain knowledge & to know Relative Velocity Method – Single slider crank chain             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/RjYCilqem2Q">https://youtu.be/RjYCilqem2Q</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 29 | Problems on Relative Velocity Method – Single slider crank chain | To make the student gain knowledge & to know Problems on Relative Velocity Method – Single slider crank chain | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/RjYCilqem2Q">https://youtu.be/RjYCilqem2Q</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 30 | Problems on Relative Velocity Method – Single slider crank chain | To make the student gain knowledge & to know Problems on Relative Velocity Method – Single slider crank chain | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/RjYCilqem2Q">https://youtu.be/RjYCilqem2Q</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 31 | Kleins construction                                              | To make the student gain knowledge & to know Kleins construction                                              | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/luS_rfA0an0">https://youtu.be/luS_rfA0an0</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 32 | Coriolis component of acceleration.                              | To make the student gain knowledge & to know Coriolis component of acceleration.                              | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/RBVi-4aftNo">https://youtu.be/RBVi-4aftNo</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 33 | Coriolis component of acceleration.                              | To make the student gain knowledge & to know Coriolis component of acceleration.                              | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/RBVi-4aftNo">https://youtu.be/RBVi-4aftNo</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

|    |                                                        |                                                                                                     |                                                                                                                                                              |                                                                                                                                                            |         |
|----|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|    |                                                        |                                                                                                     |                                                                                                                                                              |                                                                                                                                                            |         |
| 34 | Plane motion of body: Instantaneous centre             | To make the student gain knowledge & to know Plane motion of body: Instantaneous centre             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AOkckB3m1sA">https://youtu.be/AOkckB3m1sA</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 35 | Problems on Plane motion of body: Instantaneous centre | To make the student gain knowledge & to know Problems on Plane motion of body: Instantaneous centre | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AOkckB3m1sA">https://youtu.be/AOkckB3m1sA</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 36 | Problems on Plane motion of body: Instantaneous centre | To make the student gain knowledge & to know Problems on Plane motion of body: Instantaneous centre | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AOkckB3m1sA">https://youtu.be/AOkckB3m1sA</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 37 | Problems on Plane motion of body: Instantaneous centre | To make the student gain knowledge & to know Problems on Plane motion of body: Instantaneous centre | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AOkckB3m1sA">https://youtu.be/AOkckB3m1sA</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 38 | Revision                                               |                                                                                                     |                                                                                                                                                              |                                                                                                                                                            |         |
| 39 | Revision                                               |                                                                                                     |                                                                                                                                                              |                                                                                                                                                            |         |

#### Schedule and Sequence: Day Plan for Lesson-4

#### Lesson: 4 Cams & Belt Drives

| Session/<br>Module/<br>Day | Topic | Objectives | Before Class<br>(Videos,<br>E-Books,<br>Case Studies) | In Class<br>(Activities, Quiz,<br>Solving Problems) | Post Class<br>(Assignment,<br>Discussion<br>Forum) |
|----------------------------|-------|------------|-------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|
|----------------------------|-------|------------|-------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|

|    |                                                     |                                                                                               |                                                                                                                                                              |                                                                                                                                                            |         |
|----|-----------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 40 | Introduction to Cams                                | To make the student gain knowledge & to know introduction to Cams                             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/oQrcPiQuCHI">https://youtu.be/oQrcPiQuCHI</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 41 | Types of followers and cams                         | To make the student gain knowledge & to know Types of followers and cams                      | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/oQrcPiQuCHI">https://youtu.be/oQrcPiQuCHI</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 42 | Types of follower motion: Uniform velocity          | To make the student gain knowledge & to know Types of follower motion: Uniform velocity       | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AaHPDLCe_gU">https://youtu.be/AaHPDLCe_gU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 43 | Problems on follower motion: Uniform velocity       | To make the student gain knowledge & to know Problems on follower motion: Uniform velocity    | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AaHPDLCe_gU">https://youtu.be/AaHPDLCe_gU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 44 | Types of follower motion: Simple harmonic motion    | To make the student gain knowledge & to know Types of follower motion: Simple harmonic motion | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Qp1T4oFe_gQ">https://youtu.be/Qp1T4oFe_gQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 45 | Problems on follower motion: Simple harmonic motion | To make the student gain knowledge & to know Problems on follower                             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Qp1T4oFe_gQ">https://youtu.be/Qp1T4oFe_gQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

|    |                                                                                                  |                                                                                                                                                                   |                                                                                                                                                                        |                                                                                                                                                                  |                |
|----|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|    |                                                                                                  | <b>motion:<br/>Simple<br/>harmonic<br/>motion</b>                                                                                                                 |                                                                                                                                                                        |                                                                                                                                                                  |                |
| 46 | <b>Types of<br/>follower<br/>motion:<br/>uniform<br/>acceleration<br/>and<br/>retardation</b>    | <b>To make the<br/>student gain<br/>knowledge<br/>&amp; to know<br/>Types of<br/>follower<br/>motion:<br/>uniform<br/>acceleration<br/>and<br/>retardation</b>    | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL<br/><a href="https://youtu.be/E4uI-VjUPCs">https://youtu.be/E4uI-VjUPCs</a></li> </ul>   | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| 47 | <b>Problems on<br/>follower<br/>motion:<br/>uniform<br/>acceleration<br/>and<br/>retardation</b> | <b>To make the<br/>student gain<br/>knowledge<br/>&amp; to know<br/>Problems on<br/>follower<br/>motion:<br/>uniform<br/>acceleration<br/>and<br/>retardation</b> | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL<br/><a href="https://youtu.be/E4uI-VjUPCs">https://youtu.be/E4uI-VjUPCs</a></li> </ul>   | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| 48 | <b>Roller<br/>follower –<br/>circular cam<br/>with straight,<br/>flanks.</b>                     | <b>To make the<br/>student gain<br/>knowledge<br/>&amp; to know<br/>Roller<br/>follower –<br/>circular cam<br/>with<br/>straight,<br/>flanks</b>                  | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL<br/><a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| 49 | <b>Problems on<br/>circular cam<br/>with straight,<br/>flanks.</b>                               | <b>To make the<br/>student gain<br/>knowledge<br/>&amp; to know<br/>Problems on<br/>circular cam<br/>with<br/>straight,<br/>flanks.</b>                           | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL<br/><a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| 50 | <b>Roller<br/>follower –<br/>circular cam<br/>with concave<br/>flanks.</b>                       | <b>To make the<br/>student gain<br/>knowledge<br/>&amp; to know<br/>Roller<br/>follower –</b>                                                                     | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL<br/><a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |

|           |                                                           |                                                                                                            |                                                                                                                                                                    |                                                                                                                                                                  |                |
|-----------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|           |                                                           | <b>circular cam with concave flanks.</b>                                                                   |                                                                                                                                                                    |                                                                                                                                                                  |                |
| <b>51</b> | <b>Problems on circular cam with concave flanks.</b>      | <b>To make the student gain knowledge &amp; to know Problems on circular cam with concave flanks.</b>      | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| <b>52</b> | <b>Roller follower – circular cam with convex flanks.</b> | <b>To make the student gain knowledge &amp; to know Roller follower – circular cam with convex flanks.</b> | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| <b>53</b> | <b>Problems on circular cam with convex flanks.</b>       | <b>To make the student gain knowledge &amp; to know Problems on circular cam with convex flanks.</b>       | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/55tKV BVQDUY">https://youtu.be/55tKV BVQDUY</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| <b>54</b> | <b>Introduction to Power Transmissions</b>                | <b>To make the student gain knowledge &amp; to know Introduction to Power Transmissions</b>                | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL</li> </ul>                                                                           | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| <b>55</b> | <b>Belt and Rope Drives</b>                               | <b>To make the student gain knowledge &amp; to know Belt and rope drives</b>                               | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/nMsB6 Soz4Hc">https://youtu.be/nMsB6 Soz4Hc</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |
| <b>56</b> | <b>Selection of Belt Drive-Types of Belt Drives</b>       | <b>To make the student gain knowledge &amp; to know selection of belt drive-types of belt drives</b>       | <ul style="list-style-type: none"> <li>• Text Book</li> <li>• Video links/URL <a href="https://youtu.be/nMsB6 Soz4Hc">https://youtu.be/nMsB6 Soz4Hc</a></li> </ul> | <ul style="list-style-type: none"> <li>• Explanation with/without PPT (25 Min)</li> <li>• Video (20 Min)</li> <li>• Student Creative Response (5 Min)</li> </ul> | <b>Queries</b> |

|    |                               |                                                                            |                                                                                                                                                              |                                                                                                                                                            |         |
|----|-------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 57 | Velocity Ratio of Belt Drives | To make the student gain knowledge & to know velocity ratio of belt drives | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/nMsB6Soz4Hc">https://youtu.be/nMsB6Soz4Hc</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 58 | Slip of Belt, Creep of Belt   | To make the student gain knowledge & to know slip of belt, creep of belt   | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 59 | tensions for flat belt drive, | tensions for flat belt drive,                                              | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 60 | Angle of Contact              | To make the student gain knowledge & to know angle of contact              | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 61 | Centrifugal Tension,          | To make the student gain knowledge & to know centrifugal tension,          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 62 | Maximum Tension of Belt       | To make the student gain knowledge & to know maximum tension of belt       | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 63 | Problems on Belt Drives       | To make the student gain knowledge & to know Problems on Belt Drives       | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Fb4weO0HLxk">https://youtu.be/Fb4weO0HLxk</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

|    |                                                               |                                                                                                            |                                                                                                                                                              |                                                                                                                                                            |         |
|----|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|    |                                                               |                                                                                                            |                                                                                                                                                              |                                                                                                                                                            |         |
| 64 | Chains-length, angular speed ratio, classification of chains. | To make the student gain knowledge & to know Chains-length, angular speed ratio, classification of chains. | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/4PsJkXO70Xc">https://youtu.be/4PsJkXO70Xc</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

**Schedule and Sequence: Day Plan for Lesson-5**

**Lesson: 5 Gears & Gear Trains**

| Session/<br>Module/<br>Day | Topic                                          | Objectives                                                                                  | Before Class<br>(Videos,<br>E-Books,<br>Case Studies)                                                                                                        | In Class<br>(Activities, Quiz,<br>Solving Problems)                                                                                                        | Post Class<br>(Assignment,<br>Discussion Forum) |
|----------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 65                         | Introduction to Gears                          | To make the student gain knowledge & to know Gears                                          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AS0zQhMfJUw">https://youtu.be/AS0zQhMfJUw</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                         |
| 66                         | friction wheels and toothed gears–types        | To make the student gain knowledge & to know friction wheels and toothed gears–types        | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/AS0zQhMfJUw">https://youtu.be/AS0zQhMfJUw</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                         |
| 67                         | law of gearing                                 | To make the student gain knowledge & to know law of gearing                                 | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/Mh1fZ9zwc10">https://youtu.be/Mh1fZ9zwc10</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                         |
| 68                         | Form of teeth: cycloidal and involute profiles | To make the student gain knowledge & to know Form of teeth: cycloidal and involute profiles | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/PggSI9GSX8E">https://youtu.be/PggSI9GSX8E</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries                                         |

|    |                                                             |                                                                                                          |                                                                                                                                                              |                                                                                                                                                            |         |
|----|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 69 | Velocity of sliding                                         | To make the student gain knowledge & to know Velocity of sliding                                         | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/BjKxYZ93Fbs">https://youtu.be/BjKxYZ93Fbs</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 70 | interference s                                              | To make the student gain knowledge & to know interferences                                               | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 71 | Condition for minimum number of teeth to avoid interference | To make the student gain knowledge & to know Condition for minimum number of teeth to avoid interference | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 72 | expressions for arc of contact and path of contact          | To make the student gain knowledge & to know expressions for arc of contact and path of contact          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 73 | expressions for arc of contact and path of contact          | To make the student gain knowledge & to know expressions for arc of contact and path of contact          | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 74 | Problems on Gears                                           | Problems on Gears                                                                                        | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 75 | Introduction to Helical, Bevel and worm gearing             | To make the student gain knowledge & to know Introduction to                                             | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SJY9iSCOLOU">https://youtu.be/SJY9iSCOLOU</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> </ul>                                            | Queries |

|    |                                                                          |                                                                                                                       |                                                                                                                                                              |                                                                                                                                                            |         |
|----|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|    |                                                                          | Helical, Bevel and worm gearing                                                                                       | <a href="https://youtu.be/kBLWugfEjrs">u.be/kBLWugfEjrs</a>                                                                                                  | <ul style="list-style-type: none"> <li>Student Creative Response (5 Min)</li> </ul>                                                                        |         |
| 76 | Introduction to gear Trains                                              | To make the student gain knowledge & to know Introduction to gear Trains speeds                                       | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/lu_Qw4Y4XRQ">https://youtu.be/lu_Qw4Y4XRQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 77 | Types – Simple and reverted wheel train                                  | To make the student gain knowledge & to know Types – Simple and reverted wheel train                                  | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/a6O861Et2aQ">https://youtu.be/a6O861Et2aQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 78 | Epicyclic gear Train.                                                    | To make the student gain knowledge & to know Epicyclic gear Train.                                                    | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/a6O861Et2aQ">https://youtu.be/a6O861Et2aQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 79 | Methods of finding train value or velocity ratio – Epicyclic gear trains | To make the student gain knowledge & to know Methods of finding train value or velocity ratio – Epicyclic gear trains | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/a6O861Et2aQ">https://youtu.be/a6O861Et2aQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 80 | Problems on Gear Trains.                                                 | To make the student gain knowledge & to know Differential gear for an automobile.                                     | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/a6O861Et2aQ">https://youtu.be/a6O861Et2aQ</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |
| 81 | Differential gear for an automobile.                                     | To make the student gain knowledge & to know Vibration isolation and transmissibility.                                | <ul style="list-style-type: none"> <li>Text Book</li> <li>Video links/URL <a href="https://youtu.be/SOgoejxzF8c">https://youtu.be/SOgoejxzF8c</a></li> </ul> | <ul style="list-style-type: none"> <li>Explanation with/without PPT (25 Min)</li> <li>Video (20 Min)</li> <li>Student Creative Response (5 Min)</li> </ul> | Queries |

**Text Books:**

1. Mechanism and Machine Theory by Ashok G. Ambekar, PHI Publishers
2. Theory of Machines – S. S Rattan- TMH
3. Theory of machines and Mechanisms – J.J Uicker, G.R.Pennock & J.E.Shigley - Oxford publishers.

**References:**

1. Theory of Machines Sadhu Singh, Pearsons Edn
2. Theory of machines and Machinery /Vickers /Oxford .
3. Theory of Machines by Thomas Bevan/ CBS
4. Kinematics of Machinery through Hyper Works – J.S. Rao – Springer Publ
5. Theory of Mechanisms and machines – A.Ghosh & A.K.Malik – East West Press Pvt. Ltd.