GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

Department of Mechanical Engineering

**LESSON PLAN**

SESSION- 2023-24

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| **Subject** | **Theory of Machine** |
| **Branch** | **Mechanical Engineering** | **Name of the Faculty** | **MR. GYANENDRA MOHAN DAS** |
| **Course Code** | **Th-1** | **Semester** | **4th Semester** |
| **Total Periods** | **60** | **Examination** | **2023** |
| **Theory Period** | **4P/ W** | **Class Test** | **20** Marks |
| **Maximum Marks** | **100 Marks** | **End Semester Examination** | **80** Marks |

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| **Week** | **Class Day** | **Theory Topics** |
| 1st | 1st | Link and types of link, Pair and types of pair, lower pair &higher pair. |
| 2nd | Joints and types of joints. Relation between link, joint and pair.Degrees of freedom. Kinematic Chain. |
| 3rd | Mechanism, Machine, Structure, Difference between machine and structure. |
| 4th | Four bar chain mechanism and its inversion |
| 2nd | 1st | Slider crank chain mechanism and its inversion |
| 2nd | Cam and Follower |
| 3rd | Review class |
| 4th | *Assignment Evaluation & Class Test* |
| 3rd | 1st | Revision on friction (Force of friction, coefficient of friction, limitingfriction, angle of friction, angle of repose, friction onhorizontal plane and inclined plane) |
| 2nd | Screw Jack: Terminology, Friction between nut and screw forscrew jack.Torque required to raise or lower the load |
| 3rd | Efficiency of screw jack. Numerical |
| 4th | Bearing: Function of bearing, Classification, Ball, roller andneedle roller bearing |
| 4th | 1st | Torque transmission in flat collar bearing, Simple Problems |
| 2nd | Torque transmission in flat pivot bearing, Simple Problems |
| 3rd | Torque transmission in conical pivot bearing, Numerical |
| 4th | Clutch, Classification, Single and multiple clutch, Working ofsingle plateclutch |

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| 5th | 1st | Torque transmission in Single and multiple clutch, SimpleProblems |
| 2nd | Working of simple frictional brakes |
| 3rd | Working of absorption type dynamometer |
| 4th | Review class |
| 6th | 1st | *Assignment Evaluation & Class Test* |
| 2nd | Concept of power transmission, types of drives – belt, chain, rope andgear drives. |
| 3rd | Types of belt drive, Pulley and types of pulley |
| 4th | Velocity ratio of belt drive, Length of open and crossed beltdrive |
| 7th | 1st | Numerical Discussion |
| 2nd | Ratio of tension, Power transmission in belt, Numerical |
| 3rd | Initial tension in belt, Centrifugal tension, Determination of belt thickness and width for given permissible stress for openand crossed beltconsidering centrifugal tension |
| 4th | Numerical Discussion |
| 8th | 1st | V-belt and V-belt pulley, Crowning of pulley, Gear drives and its |
| 2nd | Working principle of simple, compound gear trains |
| 3rd | Working principle of reverted and epicyclic gear trains |
| 4th | Review class |
| 9th | 1st | *Assignment Evaluation & Class Test* |
| 2nd | Function of governor, Classification of governor, Working ofcentrifugal governor |
| 3rd | Working of Watt and Porter Governor |
| 4th | Working of Proell and Hartnell governor |
| 10th | 1st | Sensitiveness and Stability of governor, isochronous governor |
| 2nd | Numerical Discussion |
| 3rd | Flywheel: Function of flywheel, difference between flywheel and governor |
| 4th | Fluctuation of energy, coefficient of fluctuation of energy, coefficient of fluctuation of speed |
| 11th | 1st | Numerical Discussion |
| 2nd | Review class |
| 3rd | *Assignment Evaluation & Class Test* |
| 4th | Concept of static and dynamic balancing |
| 12th | 1st | Principle of Balancing of reciprocating masses |
| 2nd | Static Balancing of rotating masses |

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|  | 3rd | Static Balancing of rotating masses: Continue |
| 4th | Causes and effects of unbalance |
| 13th | 1st | Numerical Discussion |
| 2nd | Review class |
| 3rd | *Assignment Evaluation & Class Test* |
| 4th | Introduction to vibration and the terms Amplitude, time period,frequency andcycle |
| 14th | 1st | Classification of vibration, Concept of natural, forced anddamped vibration |
| 2nd | Longitudinal and Transverse vibration |
| 3rd | Torsional Vibration |
| 4th | Causes and remedies of vibration |
| 15th | 1st | Review class |
| 2nd | *Assignment Evaluation & Class Test* |
| 3rd | *Discussion on Previous year question paper* |
| 4th | *Discussion on Previous year question paper* |
| 14th | 1st | Classification of vibration, Concept of natural, forced anddamped vibration |
| 2nd | Longitudinal and Transverse vibration |
| 3rd | Torsional Vibration |
| 4th | Causes and remedies of vibration |
| 15th | 1st | Review class |
| 2nd | *Assignment Evaluation & Class Test* |
| 3rd | *Discussion on Previous year question paper* |
| 4th | *Discussion on Previous year question paper* |