|  |
| --- |
| LESSON PLAN-4TH SEMESTER (2021) |
| Subject- Theory of Machine (TH-1) |
| Name of the Faculty- Debabrata Ghosh |
| MONTH | MODULE/UNIT | COURSE TO BE COVERED | CLASSES REQUIRED | REMARKS (IF ANY) |
|  | **Module-1** | **Simple Mechanism** | **08** |  |
|  |  | Link ,kinematic chain, mechanism, machine  | 1 |  |
|  |  | Inversion, four bar link mechanism and its inversion  | 2 |  |
|  |  | Lower pair and higher pair  | 2 |  |
|  |  | Cam and followers  | 1 |  |
|  |  | Problems | 2 |  |
|  | **Module-2** | Friction | **12** |  |
|  |  | Friction between nut and screw for square thread, screw jack  | 1 |  |
|  |  | Bearing and its classification, Description of roller, needle roller& ball bearings  | 1 |  |
|  |  | Torque transmission in flat pivot& conical pivot bearings  | 2 |  |
|  |  | Flat collar bearing of single and multiple types.  | 1 |  |
|  |  | Torque transmission for single and multiple clutches  | 2 |  |
|  |  | Working of simple frictional brakes.  | 1 |  |
|  |  | Working of Absorption type of dynamometer  | 2 |  |
|  |  | Problems | **2** |  |
|  | **Module-3** | **Power Transmission** | **12** |  |
|  |  | Concept of power transmission and Type of drives, belt, gear and chain drive. | 1 |  |
|  |  | Computation of velocity ratio, length of belts (open and cross)with and without slip.  | 02 |  |
|  |  | Ratio of belt tensions, centrifugal tension and initial tension.  | 1 |  |
|  |  | Power transmitted by the belt.  | 1 |  |
|  |  | Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension.  | 1 |  |
|  |  | V-belts and V-belts pulleys.  | 1 |  |
|  |  | Concept of crowning of pulleys  | 1 |  |
|  |  | Gear drives and its terminology  | 1 |  |
|  |  | Gear trains, working principle of simple, compound, reverted and epicyclic gear trains.  | 02 |  |
|  |  | Problems | 1 |  |
|  | **Module-4** | **Governors and Flywheel** | **12** |  |
|  |  | Function of governor  | 1 |  |
|  |  | Classification of governor  | 1 |  |
|  |  | Working of Watt, Porter, Proel and Hartnell governors  | 4 |  |
|  |  | Conceptual explanation of sensitivity, stability and isochronisms.  | 1 |  |
|  |  | Function of flywheel.  | 1 |  |
|  |  | Comparison between flywheel &governor.  | 1 |  |
|  |  | Fluctuation of energy and coefficient of fluctuation of speed.  | 1 |  |
|  |  | Problems | 2 |  |
|  | **Module-5** | **Balancing of Machine** | **8** |  |
|  |  | Concept of static and dynamic balancing.  | 1 |  |
|  |  | Static balancing of rotating parts.  | 2 |  |
|  |  | Principles of balancing of reciprocating parts.  | 2 |  |
|  |  | Causes and effect of unbalance.  | 1 |  |
|  |  |  Difference between static and dynamic balancing  | 1 |  |
|  |  | Solve simple problems | 1 |  |
|  | **Module-6** | **Vibration of Machine Parts** | **08** |  |
|  |  | Introduction to Vibration and related terms (Amplitude, time period and frequency, cycle) | 1 |  |
|  |  | Classification of vibration. | 1 |  |
|  |  | Basic concept of natural, forced & damped vibration | 1 |  |
|  |  | Torsional and Longitudinal vibration | 1 |  |
|  |  | Causes & remedies of vibration. using Euler’s formula (no derivation) in Columns with various end conditions | 2 |  |
|  |  | Solve simple problems | 2 |  |