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| **Discipline**  **:Mechanical engineering.** | **Semester:4th** | **Name of the Teaching Faculty : MANOJ KUMAR SAHOO** |
| **Subject: THEORY**  **OF MACHINES.** | **No of Days /Per week class allotted** | **SESSION-2023-24**  **No of week:15** |
| **Week** | **Class day** | **Theory/Practical topics** |
| **1St** | **1st** | UNIT .1-Simplemechanism **Link,kinematicchain,mechanism** |
| 2nd | Definition of machine describe it? |
| 3rd | Defination of Inversion & types |
| 4th | Four bar link mechanism and its inversion? |
| 2nd | 1st | Single slider crank mechanism &its inversion. |
| 2nd | Double slider mechanisim its inversion. |
| 3rd | What is DOF and numerical on its. |
| 4th | Lower pair and higher pair and types of cam and follower. |
| 3rd | 1st | **UNIT 2**- **FRICTION**  **Introduction on it and example .** |
| 2nd | Type of friction and friction law |
| 3rd | Friction between nut and screw for square thread. |
| 4th | Screw jack  derive the torque required for lifting the load |
| 4th | 1st | Bearing and its classification, Description of roller, needle roller &ball bearings |
| 2nd | Torque transmission in flat pivot & conical pivot bearings. |
| 3rd | Numerical on above |
| 4th | Flat collar bearing of single and multiple types. |
| 5th | 1st | Torque transmission for single and multiple clutches |
| 2nd | Simple problems on above. |
| 3rd | Working of Absorption type of dynamometer |
| 4th | Working of simple frictional brakes. |
| **6th** | **1st** | Unit 3-PowerTransmission Concept of power transmission |
| 2nd | Type of drives, belt, gear and chain drive. |
| 3rd | Computation of velocity ratio, length of belts(open and cross) with and with outs lip. |
| 4th | Ratio of belt tensions, centrifugal tension and initial tension. |
| 7th | 1st | Power transmitted by the belt. |
| 2nd | Determine belt thickness and width for given permissible stress for open belt. |
| 3rd | Determine belt thickness and width for given permissible stress for crossed belt considering centrifugal tension |
| 4th | V-belts and V-beltspulleys. |
| 8th | 1st | Concept of crowning of pulleys |
| 2nd | Gear drives and its terminology |
| 3rd | Gear trains, working principle of simple, compound, reverted and epicyclic gear trains. |
| 4th | Numerical on above |
| **9th** | **1st** | Unit 4-GovernorsandFlywheel Function of governor |
| 2nd | Classification of governor |
| 3rd | Working of watt governor and derive the height of governor. |
| 4th | Working of porter governor and derive the height of governor. |
| 10th | 1st | Working of proel governor and derive the height of governor. |
| 2nd | Working of Hartnell governor and derive the height of governor. |
| 3rd | Conceptual explanation of sensitivity ,stability and isochronisms. |
| 4th | Numerical on above. |
| 11th | 1st | Function of flywheel. |
| 2nd | Comparison between flywheel & governor. |  |
| 3rd | Fluctuationofenergyandcoefficientoffluctuationofspeed. |
| 4th | Numerical on flywheel. |
| **12th** | **1st** | Unit 5-BalancingofMachine Concept of static and dynamic balancing. |
| 2nd | Static balancing of rotating parts. |
| 3rd | How to balance with deribation & problem. |
| 4th | Principles of balancing of reciprocating parts |
| 13th | 1st | Simple problem on reciprocating parts. |
| 2nd | Causes and effect of unbalance. |
| 3rd | **How to balance rotating parts of a mass.** |
| 4th | Difference between static and dynamic balancing |
| 14th | 1st | UNIT 6 -Vibrationofmachineparts Introduction to Vibration and related terms. |
| 2nd | Defination Amplitude ,time period and frequency ,cycle |
| 3rd | Classification of vibration. |
| 4th | Basic concept of natural, forced & damped vibration. |
| 15th | 1st | Torsional Vibration. |
| 2nd | Numerical on it |
| 3rd | LongitudinalVibration |
| 4th | Causes & remedies of vibration. |

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