**USHA RAMA COLLEGE OF ENGINEERING AND TECHNOLOGY**

*Department of Mechanical Engineering*

**LESSON PLAN::C0301**

|  |  |
| --- | --- |
| **Academic Year** : 2016-17 | **Sem**  : I |
| **Course**: **DYNAMICS OF MACHINERY** | |
| **Class** : III B.TECH | **Section** : ME A&B |
| **Date of commencement of Class work** :13/06/2016 | **Date of end of Class work** : 08/10/2016 |
| **Prepared By**: D.Murali krishna,  Associate Professor | **Approved By**: HOD |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lecture**  **No** | **Date (As per Academic calendar)** | **Topics to be covered** | **Actual**  **Date of completion** | **Remarks** |
| 1 | **13.6.16** | **UNIT-II FRICTION :**  Friction of inclined plane |  |  |
| 2 | **14.6.16** | Friction of screw and nuts strength |  |  |
| 3 | **15.6.16** | Problems on above topics |  |  |
| 4 | **16.6.16** | Friction of pivot bearing |  |  |
| 5 | **17.6.16** | Problems on above topics |  |  |
| 6 | **18.6.16** | Friction of collar bearing |  |  |
| 7 | **20.6.16** | Problems on above topics |  |  |
| 8 | **21.6.16** | friction circle and friction axis: lubricated surfaces |  |  |
| 9 | **22.6.16** | friction circle and friction axis: boundary friction, film lubrication |  |  |
| 10 | **23.6.16** | Problems on above topics |  |  |
| 11 | **24.6.16** | Friction clutches- single disc or plate clutch multiple disc clutch |  |  |
| 12 | **25.6.16** | Problems on above topics |  |  |
| 13 | **27.6.16** | cone clutch, centrifugal clutch |  |  |
| 14 | **28.6.16** | Problems on above topics |  |  |
| 15 | **29.6.16** | Simple block brakes |  |  |
| 16 | **30.6.16** | Internal expanding brake |  |  |
| 17 | **01.7.16** | band brake of vehicle |  |  |
| 18 | **02.7.16** | Problems on above topics |  |  |
| 19 | **04.07.16** | Problems on above topics |  |  |
| 20 | **05.7.16** | General description and operation of dynamometers |  |  |
| 21 | **07.7.16** | Prony brake dynamometer |  |  |
| 22 | **08.7.16** | Rope brake dynamometer |  |  |
| 23 | **09.7.16** | Epicyclic-train brake dynamometer |  |  |
| 24 | **11.7.16** | Bevis Gibson and belt transmission |  |  |
| 25 | **12.7.16** | Problems on above topics |  |  |
| 26 | **13.7.16** | **UNIT – I**  **PRECESSION:**  Introduction  design of Engineering Materials  design of Engineering Materials in the design of |  |  |
| 27 | **14.7.16** | Gyroscopes |  |  |
| 28 | **15.7.16** | precessional angular motion, Gyroscopic couple |  |  |
| 29 | **16.7.16** | Effect of Gyroscopic couple on an aeroplane |  |  |
| 30 | **18.7.16** | Problems on above topics |  |  |
| 31 | **19.7.16** | Effect of Gyroscopic couple on a naval ship during steering numbers |  |  |
| 32 | **20.7.16** | Effect of Gyroscopic couple on a naval ship during pitching |  |  |
| 33 | **21.7.16** | Effect of Gyroscopic couple on a naval ship during rolling |  |  |
| 34 | **22.7.16** | Problems on above topics |  |  |
| 35 | **23.7.16** | Problems on above topics |  |  |
| 36 | **25.7.16** | stability of a four wheel drive moving in a curved path |  |  |
| 37 | **26.7.16** | Problems on above topics |  |  |
| 38 | **27.7.16** | stability of a two wheel vechicle taking a turn |  |  |
| 39 | **28.7.16** | **UNIT-III**  **TURNING MOMENT DIAGRAMS:**  Dynamic force analysis of slider  crank mechanism |  |  |
| 40 | **29.7.16** | inertia torque, angular velocity and acceleration of connecting rod |  |  |
| 41 | **30.7.16** | crank effort and turning moment diagrams |  |  |
| 42 | **01.8.16** | fluctuation of energy |  |  |
| 43 | **02.8.16** | fly wheels and their design |  |  |
| 44 | **03.8.16** | Problems on above topics |  |  |
| 45 | **04.08.16** | static force analysis of planar mechanisms |  |  |
| 46 | **05.08.16** | Problems on above topics |  |  |
| 47 | **06.8.16** | dynamic force analysis of planar mechanisms |  |  |
|  | **08.8.16 To13.8.16** | **MID EXAMINATIONS-I** |  |  |
| 48 | **16.8.16** | **UNIT-IV GOVERNERS:**  Watt governer |  |  |
| 49 | **17.8.16** | porter and proell governors |  |  |
| 50 | **18.8.16** | Problems on above topics |  |  |
| 51 | **19.8.16** | Problems on above topics |  |  |
| 52 | **20.8.16** | spring loaded governors Hartnell |  |  |
| 53 | **22.8.16** | Hartung with auxiliary springs, |  |  |
| 54 | **23.08.16** | Problems on above topics |  |  |
| 55 | **24.08.16** | sensitiveness, isochronism and hunting |  |  |
| 57 | **26.8.16** | Problems on above topics |  |  |
| 58 | **27.8.16** | **UNIT-V BALANCING:**  Balancing of rotating masses single and multiple - single  and different planes |  |  |
| 59 | **29.8.16** | Problems on above topics |  |  |
| 60 | **30.08.16** | Problems on above topics |  |  |
| 61 | **31.08.16** | Primary, secondary, and higher balancing of reciprocating masses |  |  |
| 62 | **01.9.16** | Problems on above topics |  |  |
| 63 | **02.9.16** | Problems on above topics |  |  |
| 64 | **03.9.16** | Problems on above topics |  |  |
| 65 | **06.09.16** | unbalanced forces and couples - examination of "V" multi cylinder in line |  |  |
| 66 | **07.9.16** | Problems on above topics |  |  |
| 67 | **8.9.16** | radial engines for primary and secondary balancing |  |  |
| 68 | **09.9.16** | Problems on above topics |  |  |
| 69 | **10.9.16** | locomotive balancing |  |  |
| 70 | **13.9.16** | Problems on above topics |  |  |
| 71 | **14.9.16** | hammer blow |  |  |
| 72 | **15.9.16** | swaying couple |  |  |
| 73 | **16.9.16** | variation of tractive effort |  |  |
| 74 | **17.9.16** | Problems on above topics |  |  |
| 75 | **19.9.16** | **UNIT – VI**  **VIBRATIONS**:  Free Vibration of spring mass system - oscillation of pendulums |  |  |
| 76 | **20.9.16** | centers of oscillation and suspension |  |  |
| 77 | **21.9.16** | Problems on above topics |  |  |
| 78 | **22.9.16** | Problems on above topics |  |  |
| 79 | **23.9.16** | transverse loads, vibrations of beams with concentrated and distributed loads. |  |  |
| 80 | **24.9.16** | Problems on above topics |  |  |
| 81 | **26.9.16** | Problems on above topics |  |  |
| 82 | **27.9.16** | Dunkerly's methods |  |  |
| 83 | **28.9.16** | Raleigh's method, |  |  |
| 84 | **01.10.16** | whirling of shafts, critical speeds |  |  |
| 85 | **03.10.16** | torsional vibrations |  |  |
| 86 | **04.10.16** | two and three rotor systems |  |  |
| 87 | **05.10.16** | Simple problems on forced damped vibration |  |  |
| 88 | **06.10.16** | vibration isolation and transmissibility |  |  |
| 89 | **07.10.16** | Problems on above topics |  |  |
| 90 | **08.10.16** | Problems on above topics |  |  |
|  | **10.10.16 To 15.10.16** | **Mid Exams-II** |  |  |

**TEXT BOOKS:**

1. Theory of Machines / S.S Ratan/ Mc. Graw Hill Publ
2. Mechanism and machine theory by Ashok G

**REFERENCES:**

1. Theory of machines / Khurmi / S.Chand
2. Mechanism and Machine Theory / JS Rao and RV Dukkipati / New

**List the Course Outcomes (Cos):**

|  |  |  |  |
| --- | --- | --- | --- |
| Sub code | Sub Name | COs | Expected level of attainment  On 5 scale |
|  | **DYNAMICS OF MACHINERY** | 1. Analyze stabilization of sea vehicles, aircrafts and  automobile vehicles.  2. Compute frictional losses, torque transmission of mechanical systsms  3. Analyze dynamic force analysis of slider crank mechanism and design of flywheel.  4 Understand balancing of reciprocating and rotary masses | 3.5  3.5  3.5  3.5 |

**Signature of faculty Head of the Department**