IV B.TECH - I SEMESTER

MACHINE DYNAMICS LAB

Course Code: ME7L2 **Credits: 2**
Lecture: -- **Internal assessment: 25 marks**
Practice: 3 periods/week **Semester end examination: 50 marks**

COURSE OBJECTIVES:

- Determine the vibration parameters of a vibrating system
- Predict the radius of gyration and moment of inertia of vibrating system
- Verify the static and dynamic balancing
- Study the effect of gyroscopic couple and operations of robotic arm

COURSE OUTCOMES:

Upon the completion of this course the student will be able to:

1. Evaluate the natural frequencies in different vibrating systems and effect of gyroscopic couple
2. Compute the radius of gyration & Moment of Inertia of oscillating part in vibration system
3. Apply the concepts of damping to determine damping coefficient
4. Measure the amplitude of vibration in damped and un damped vibrating system
5. Verify the static balancing and dynamic balancing
6. Implement the operations to manipulate the robot arm in industries

Prerequisites: Dynamics of Machinery

Any 12 Experiments from following

LIST OF EXPERIMENTS

1. Determination of Natural frequency of single mass, single helical spring system
2. Determination of Natural frequency of combination of springs – springs in parallel or springs in series
3. Determination of Natural frequency of un damped torsional single rotor system
4. Determination of radius of gyration of a given compound pendulum
5. Determination of radius of gyration, moment of inertia – bifilar suspension Method
6. To find Damping coefficient of torsional single rotor system
7. Determination of amplitude of vibration of damped vibrating system
8. Determination of amplitude of vibration of un damped vibrating system
9. Verify the Static balancing using steel balls
10. Verify the Dynamic balancing using steel balls
11. Whirling of shafts/ determination of critical speed with Rotors
12. Gyroscopic couple verification

13. Palletizing operation using Robot Arm
14. Direct Kinematic Analysis of Robot Arm

Reference Books

1. Mechanical vibrations, (4th edition) by S.S.Rao Pearson education publications, Padparganj Delhi reprint 2004.