4/4 B.Tech. SEVENTH SEMESTER

ME7L2 **MACHINE DYNAMICS LAB** **Credits: 2**

Lecture:- **Internal assessment: 25marks**
Practice: 3 periods/week **Semester end examination: 50 marks**

Objectives:

1. Determine the vibration parameters of a vibrating system
2. Predict the radius of gyration and moment of inertia of vibrating system
3. Check the static and dynamic balancing
4. Study the effect of gyroscopic couple and operations of robotic arm

Learning outcomes:

At the end of course the students will be able to:

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

Prerequisites:
Dynamics of Machinery

Any 12 Experiments from following

LIST OF EXPERIMENTS

1. Natural frequency of single mass, single helical spring system.
2. Natural frequency of combination of springs – springs in parallel or springs in series
3. Natural frequency of undamped 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. Damping coefficient of torsional single rotor system – Effect of depth of immersion in oil and damping ratio

7. Determination of amplitude of vibration of damped vibrating system.

8. Determination of amplitude of vibration of undamped vibrating system.

9. Static balancing using steel balls

10. Dynamic balancing using steel balls.

11. Whirling of shafts/ determination of critical speed with and with out Rotors.

12. Gyroscopic couple verification.

13. Palletizing operation using Robot Arm

14. Direct Kinematic Analysis of Robot Arm