



MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

DEPARTMENT OF MECHANICAL ENGINEERING

2050378 KINEMATICS AND DYNAMICS OF MACHINERY LAB

B.Tech.III Year-I Sem

L/T/P/C
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VISION

The Mechanical Engineering Department strives for immense success in the field of education, research and development by nurturing the budding minds of young engineers inventing sets of new designs and new products which may be envisaged as the modalities to bring about a green future for humanity”

MISSION

Equipping the students with manifold technical knowledge to make them efficient and independent thinkers and designers in national and international arena. Encouraging students and faculties to be creative and to develop analytical abilities and efficiency in applying theories into practice, to develop and to disseminate new knowledge. Pursuing collaborative work in research and development organizations, industrial enterprises, research and academic institutions of national and international standards, to introduce new knowledge and methods in engineering teaching and research in order to orient young minds towards industrial development.

LIST OF EXPERIMENTS

1. To determine the state of balance of machines for primary and secondary forces.
2. To determine the frequency of torsional vibration of a given rod.
3. Determine the effect of varying mass on the centre of sleeve in porter and proell governor.
4. Find the motion of the follower if the given profile of the cam.
5. The balance masses statically and dynamically for single rotating mass systems.
6. Determine the critical speed of a given shaft for different n-conditions.
7. For a simple pendulum determine time period and its natural frequency.
8. For a compound pendulum determine time period and its natural frequency.
9. Determine the effect of gyroscope for different motions
10. Determine time period, amplitude and frequency of un damped free longitudinal vibration of single degree spring mass systems.
11. Determine the pressure distribution of lubricating oil at various load and speed of a Journal bearing.
12. Determine time period, amplitude and frequency of damped free longitudinal vibration of single degree spring mass systems.

COURSE OUTCOMES

| CO | Course outcome |
|----------|---|
| ME 378.1 | Understand types of motion. |
| ME 378.2 | Analyze forces and torque of components in linkages. |
| ME 378.3 | Understand forward and inverse kinematics of open loop mechanism. |
| ME 378.4 | Illustrate how to balance forces and moments produced by machine members. |
| ME 378.5 | Understand concept of whirling of shafts to determine critical speed. |
| ME 378.6 | Illustrate various governors, cam and followers. |



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PROGRAM EDUCATIONAL OBJECTIVES

| | |
|------|---|
| PEO1 | Graduates shall emerge as successful Mechanical engineer's as their career progress |
| PEO2 | Graduates apply fundamentals of engineering, in practical applications and engage in active research. |
| PEO3 | Mechanical Graduates shall have the ability to design products with interdisciplinary skills. |
| PEO4 | Graduates will serve the society with their professional skills |

PROGRAM SPECIFIC OUTCOMES

PSO1- Students acquire necessary technical skills in mechanical engineering that make them employable graduate.

PSO2- An ability to impart technological inputs towards development of society by becoming an entrepreneur

LIST OF EQUIPMENTS

1. Journal Bearing Apparatus
2. Free & Forced vibration Apparatus
3. Reciprocating masses system
4. Gyroscope Apparatus
5. Porter and Propel Governor Apparatus
6. Cam and Follower Apparatus
7. Whirling Apparatus
8. Torsion Vibration of Rod
9. Simple Pendulum
10. Compound Pendulum
11. Rotating masses system



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Do's

- Enter laboratory with appropriate laboratory uniform and shoes.
- Keep all your belongings in the book rack or at the place suggested by lab instructor.
- Bring the laboratory manual, observation and record without fail.
- Collect the instruments and check for damage if any before carrying out the experiment.
- Eliminate potentially dangerous chemical reactions by thoroughly washing beakers, test tubes, flasks
- and other glassware before and after use. Always add concentrated chemical (e.g. acid or base) to water NOT water to concentrated chemical.
- Make sure that all equipment is clean and returned to its original place after performing experiments.
- Turn off all heating apparatus, gas valves, and water faucets when not in use.
- Wear disposable gloves, as provided in the laboratory, when handling hazardous materials.
- Remove the gloves before exiting the laboratory.

Don'ts

- Don't place glassware near edge of laboratory bench.
- Don't let water drip onto power strips.
- Never point the open end of a test tube containing a substance at yourself or others.
- Don't use mobile phones during laboratory hours.
- Don't fool around in the laboratory.
- Don't come with long hair, dangling jewelry and loose or baggy clothing which are a hazard in the laboratory.