ADVANCED MECHANICAL DESIGN LAB

Course Code: 15ME2212

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Course Outcomes: At the end of the lab, a student will be able to

CO1: perform bending test, tension test on steels and validate the of numerical bending analysis results with experimental test results

CO2: fabricate the fibre composites using hand lay-up method and analyse the composite parts using FEA package

CO3: demonstrate the gyroscopic effect and estimate the torsional fatigue strength of steels

CO4: calculate the natural frequency of spring and spring-mass damper system

CO5: demonstrate the static and dynamic balancing and estimate the unbalanced mass on the given rotational components

Note: Any **TEN** exercises from the following

1. Experimental and Numerical analysis of tension test
2. Experimental and Numerical analysis of Bending test
3. Free vibration analysis on Helical spring
4. Numerical analysis (Modal and Harmonic) on Helical spring
5. Forced vibration analysis on spring mass damper system
6. Composite plate Fabrication and Numerical Analysis
7. Fatigue Test on rotating shaft
8. Gyroscope
9. Static Balancing
10. Dynamic Balancing
11. Natural frequency test using FFT analyzer and Impact Hammer
12. Forced vibration analysis using FFT analyzer and Impact Hammer
13. Design and analysis of parts of IC Engine – crankshaft, connecting rod, piston, valve gears
14. Design of power transmission systems – complete design of belt drive and gear reducer and Drafting.