

B.E / B.Tech. PRACTICAL END SEMESTER EXAMINATIONS, NOVEMBER/DECEMBER 2023

Fifth Semester

ME3581 - METROLOGY AND DYNAMICS LABORATORY

(Regulations 2021)

Time : 3 Hours

Answer any one Question

Max. Marks 100

Aim/Principle/Apparatus required/Procedure	Tabulation/Circuit/Program/Drawing	Calculation & Results	Viva-Voce	Record	Total
20	30	30	10	10	100

1.	Determine the radius of gyration and moment of inertia of the connecting rod using the oscillation method, as well as key parameters of the connecting rod using the Vernier caliper.
2.	Determine the Experimental radius of gyration, Theoretical radius of gyration and Mass Moment of Inertia of Compound Pendulum.
3.	To study and record the profile of given cam using cam analysis system and to draw the displacement diagram of the follower and the cam profile. Also to study and record the Jump speed characteristics of the cam follower mechanism
4.	Draw the characteristics curves for the motorized gyroscope's active couple Vs. Reactive couple and Weight added Vs. Reactive couple.
5.	Determine period and frequency of turned vibration of single rotor system (Undamped) and compare it with theoretical value.
6.	Draw the characteristics curves for Deflection Vs critical speed using Whirling of the shaft set up and determine critical speed of given shaft.
7.	Determine the natural frequency of Undamped free vibrations of a single degree freedom spring-mass system and draw curve for Load Vs Deflection, Load Vs Theoretical natural frequency and Load Vs Experimental natural frequency.
8.	Determine the radius of rotation, centrifugal force, sensitivity, effort, power and draw the characteristics curves of Watt governor.
9.	Determine the radius of rotation, centrifugal force, sensitivity, effort, power and draw the characteristics curves of Porter governor.

10.	Determine the radius of rotation, centrifugal force, sensitivity, effort, power and draw the characteristics curves of Proell governor.
11.	Calculate final gear ratio of the given epicyclic gear system.
12.	Calibrate and draw curves for slip gauges reading Vs measured dimension and slip gauge reading Vs error for any three linear measuring instruments.
13.	Measure and determine the taper angle of the given specimen using sine bar method.
14.	Measure the thread parameter of given screw thread using screwthread micrometers.
15.	Determine the chordal thickness and addendum of given gear using gear tooth Vernier.
16.	Measure the thread parameter of given screw thread using Measuring microscope/Profile projector
17.	Measure the surface roughness of the given specimen using roughness testing device.
18.	Measure the straightness and flatness of given specimen using roundness tester.
19.	Measure the roundness and cylindricity of given specimen using roundness tester.
20.	Measure the features of given prismatic component using Coordinate Measuring Machine (CMM).