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, Apparatus required, Procedure	Tabulation/ Drawing	Calculation& Results	Viva-Voce	Record	Total
20	30	30	10	10	100

1.	Find the least count (L.C) of the vernier caliper. Calibrate the vernier caliper using standard size slip gauges (At least with 10 sets of slip gauges) and find the error in the caliper.
2.	Determine the semi-cone angle of the given component using sine bar.
3.	Calibrate the given micrometer for 15 readings of periodic and progressive errors by using slip gauges and plot the graph between nominal value and error.
4.	Find the major, minor and effective diameter of given threaded job by using floating carriage micrometer.
5.	Calibrate the vernier height gauge using slip gauges over the range 25 to 50 mm in steps of 5 mm and estimate the heights of the various features of the given component.
6.	Using profile projector measure effective diameter, major diameter, minor diameter, thread angle, and pitch of given screw thread.
7.	Determine the module of the given spur gear using vernier caliper. (Take readings for at least 5 number of tooth).
8.	Measure various features in a prismatic component using Coordinate Measuring Machine (CMM).
9.	Measure the Flatness of given surface plate.
10.	Measure the surface finish of the milling processed surface using stylus-based instruments.
11.	Determine the moment of inertia of flywheel and axle system.

12.	Calculate the radius of gyration, mass moment of Inertia of compound pendulum for the rectangular rod.
13.	Determine the mass moment of inertia using bifilar suspension.
14.	Determine the undamped natural frequency of a spring mass system.
15.	Determine the whirling speed for various diameter shafts experimentally and compare it with the theoretical values.
16.	Study the profile of given cam using cam analysis system and draw the displacement diagram for the roller follower and the cam profile. Also study the jump-speed characteristics of the cam and follower mechanism.
17.	Determine the characteristics curves and Effort of Watt Governor.
18.	Determine the characteristics curves and Effort of Porter Governor.
19.	Determine the characteristics curves and Effort of Proell Governor.
20.	Determine the active and reactive gyroscopic couples and compare them.