

GANPAT UNIVERSITY
B. TECH SEM- VI (MECHATRONICS ENGINEERING) REGULAR
EXAMINATION- APRIL-JUNE 2017
2ME505 MECHANICAL MEASUREMENTS & METROLOGY

TIME: 3 HRS

TOTAL MARKS: 60

- Instructions:** (1) This Question paper has two sections. Attempt each section in separate answer book.
(2) Figures on right indicate marks.
(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

- Q.1 (A)** Explain with a neat sketch, the constructional features and basic working principle of Mc-Leod Gauge used for the measurement of low pressure. (05)
- (B)** Explain briefly Diaphragm pressure gauge with neat sketch. (05)
- OR**
- Q.1 (A)** Describe the construction and working of Bimetallic thermometer. (05)
- (B)** Explain briefly "Seebeck effect" and "Peltier effect". (05)
- Q.2 (A)** Sketch and describe the construction and working of Tomilson surface roughness tester. (05)
- (B)** Write a short note on "Strain gauge torsion meter". (05)
- OR**
- Q.2 (A)** Describe briefly the construction and working of Strain gauge load cell. (05)
- (B)** Describe the method of measuring power with help of Belt transmission dynamometer with neat sketch. (05)
- Q.3 (A)** Explain briefly the Venturimeter as applied to flow measurement. (05)
- (B)** What is the difference between the "Rate meters" and "Quantity meters"? (05)

SECTION: II

- Q.4 (A) Describe: (a) Loading errors (b) Environment errors (c) Dynamic errors. (05)
(B) Define fit. Distinguish between Hole Basis System & Shaft Basis System of fits. (05)

OR

- Q.4 (A) Describe with sketch (a) Imperial Standard Yard (b) International Prototype Metre. (05)
(B) Define workshop gauge and inspection gauges. Design the 'workshop' Inspection and general types of Go and No-Go plug gauges for checking the hole of $30_{-0.04}^{+0.07}$ mm. Assume each of the wear allowance and gauge allowance as 10% of work tolerance. (05)

- Q.5 (A) Explain with neat sketch measurement of effective diameter screw thread using two wire methods and derive equation. (05)
(B) Explain with neat sketch Chordal thickness method for measuring gear tooth thickness by gear tooth vernier caliper. (05)

OR

- Q.5 (A) List out different types of micrometer and explain any two of them. (05)
(B) Explain Vernier bevel protractor with neat sketch. (05)

- Q.6 (A) Explain the Reed type Comparator with neat sketch. (05)
(B) Explain in brief with neat sketch the working of "Tool maker's microscope". Give its applications. (05)

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