

GOVERNMENT POLYTECHNIC SHEOHAR			
SUBJECT: ENGINEERING METROLOGY AND INSTRUMENTATION			
IMPORTANT QUESTION			

OBJECTIVE TYPE QUESTION			
SL.NO	QUESTION	COURSE OUTCOME	BLOOM TAXANOMY
1	Metrology is the science of ____.	CO1	Remember
2	Accuracy is closeness to true value.	CO1	Remember
3	Least count of micrometer is (a) 0.1 mm (b) 0.01 mm (c) 0.001 mm (d) 1 mm	CO1	Remember
4	Vernier caliper is a ____ measuring instrument.	CO1	Remember
5	Slip gauges are line standards. (True/False)	CO1	Understand
6	Which instrument measures internal diameter? (a) Outside micrometer (b) Inside micrometer (c) Dial gauge (d) Sine bar	CO1	Remember
7	Dial gauge magnifies displacement using a ____ mechanism.	CO1	Understand
8	Systematic errors are predictable. (True/False)	CO1	Understand
9	Sine bar is used for measuring (a) length (b) angle (c) roughness (d) flatness	CO2	Remember
10	Autocollimator works on the principle of ____.	CO2	Remember
11	Spirit level measures small angular deviations. (True/False)	CO2	Understand
12	Which is an indirect angular measuring instrument? (a) Bevel protractor (b) Sine bar (c) Vernier (d) Micrometer	CO2	Remember
13	Slip gauge blocks are also called ____.	CO1	Remember
14	Wrining improves accuracy of slip gauges. (True/False)	CO1	Understand

15	Which has highest accuracy? (a) Vernier (b) Micrometer (c) Slip gauge (d) Steel rule	CO1	Analyze
16	Least count of Vernier caliper is _____ mm.	CO1	Remember
17	Hysteresis is a static error. (True/False)	CO1	Understand
18	Angle dekkar is used for (a) roughness (b) angle (c) length (d) pressure	CO2	Remember
19	Precision indicates closeness between _____ readings.	CO1	Understand
20	Optical bevel protractor uses optical magnification. (True/False)	CO2	Understand
21	GO gauge checks _____ material condition.	CO3	Remember
22	Ring gauge is used to check shaft. (True/False)	CO3	Understand
23	Which system is commonly used in industry? (a) Shaft basis (b) Hole basis (c) Mixed (d) Selective	CO3	Remember
24	Tolerance is the _____ difference between limits.	CO3	Remember
25	Interchangeability reduces assembly cost. (True/False)	CO3	Understand
26	Straightness is measured using (a) Vernier (b) Straight edge (c) Micrometer (d) Tachometer	CO3	Remember
27	Flatness error is measured using _____ level.	CO3	Remember
28	Autocollimator is a contact type instrument. (True/False)	CO3	Understand
29	Roundness is checked using (a) V-block (b) Sine bar (c) Slip gauge (d) Bevel protractor	CO3	Remember
30	CLA value is the arithmetic average of _____ deviations.	CO3	Understand
31	Waviness is secondary texture. (True/False)	CO3	Remember

32	Talysurf is a _____ based instrument. (a) Optical (b) Stylus (c) Pneumatic (d) Electrical	CO3	Remember
33	Surface roughness symbol is specified by IS _____.	CO3	Remember
34	Higher cutting speed improves surface finish. (True/False)	CO3	Understand
35	Which unit represents RMS roughness? (a) μm (b) mm (c) degree (d) radian	CO3	Understand
36	Plug gauge is used to check _____.	CO3	Remember
37	Selective assembly is used when tolerances are wide. (True/False)	CO3	Analyze
38	Which is NOT a geometric tolerance? (a) Flatness (b) Straightness (c) Diameter (d) Squareness	CO3	Remember
39	High spot method is used for measuring _____.	CO3	Remember
40	Surface roughness affects fatigue strength. (True/False)	CO3	Understand
41	Pitch is the distance between _____ points of threads.	CO4	Remember
42	Major diameter is measured using micrometer. (True/False)	CO4	Understand
43	Effective diameter is measured by (a) Pitch gauge (b) Two-wire method (c) Steel rule (d) Vernier	CO4	Remember
44	Three-wire method gives _____ accuracy.	CO4	Understand
45	Periodic pitch error repeats at regular intervals. (True/False)	CO4	Understand
46	Internal thread effective diameter is measured by (a) Comparator (b) Vernier (c) Steel rule (d) Dial gauge	CO4	Remember
47	Gear tooth thickness is measured at _____ circle.	CO4	Remember

48	Chordal thickness is measured normal to tooth. (True/False)	CO4	Understand
49	Which instrument checks gear tooth form? (a) Micrometer (b) Tool room microscope (c) Vernier (d) Sine bar	CO4	Remember
50	Parkinson gear tester measures _____ error.	CO4	Understand
51	Gear eccentricity causes vibration. (True/False)	CO4	Understand
52	Which is NOT a thread error? (a) Pitch error (b) Angle error (c) Length error (d) Diameter error	CO4	Remember
53	Thread pitch gauge gives _____ measurement.	CO4	Remember
54	Constant chord method is more accurate than chordal method. (True/False)	CO4	Analyze
55	Minor diameter of external thread is measured using (a) V-anvil micrometer (b) Depth gauge (c) Vernier (d) Dial	CO4	Remember
56	Gear tooth vernier measures thickness and _____.	CO4	Remember
57	Tool room microscope is an optical instrument. (True/False)	CO4	Remember
58	Which gear element affects noise? (a) Pitch (b) Form (c) Eccentricity (d) All	CO4	Analyze
59	Spur gear teeth are _____ to axis.	CO4	Remember
60	Gear testing ensures smooth power transmission. (True/False)	CO4	Understand
61	LVDT converts displacement into _____ signal.	CO5	Understand
62	LVDT is a contact type transducer. (True/False)	CO5	Understand
63	Capacitive transducer measures (a) Force (b) Pressure (c) Displacement (d) Speed	CO5	Remember

64	Optical encoder provides _____ output.	CO5	Remember
65	Mechanical tachometer is a contact type device. (True/False)	CO5	Remember
66	Eddy current tachometer works on (a) Magnetic drag (b) Induction (c) Capacitance (d) Resistance	CO5	Understand
67	Stroboscope works on _____ illusion. (True/False)	CO5	Understand
68	Photoelectric tachometer is non-contact. (True/False)	CO5	Understand
69	Resistance thermometer uses change in _____.	CO5	Remember
70	Thermocouple works on _____ effect.	CO5	Remember
71	Thermistor has negative temperature coefficient. (True/False)	CO5	Understand
72	Which measures high temperature? (a) Thermistor (b) Pyrometer (c) RTD (d) Glass thermometer	CO5	Remember
73	Bimetallic thermometer works on _____ expansion.	CO5	Remember
74	RTD is more accurate than thermocouple. (True/False)	CO5	Analyze
75	Incremental encoder measures (a) Speed (b) Angle (c) Position (d) All	CO5	Understand
76	Non-contact tachometer improves _____.	CO5	Understand
77	Magnetic pickup tachometer needs physical contact. (True/False)	CO5	Understand
78	Temperature measurement by radiation is called (a) Pyrometry (b) Thermometry (c) Calorimetry (d) Hygrometry	CO5	Remember
79	RTD commonly uses _____ material.	CO5	Remember

80	Speed measurement is a dynamic measurement. (True/False)	CO5	Understand
81	Venturimeter is a _____ flow meter.	CO5	Remember
82	Orifice meter has high head loss. (True/False)	CO5	Understand
83	Which meter measures low flow rate? (a) Venturi (b) Orifice (c) Rotameter (d) Pitot	CO5	Understand
84	Pitot tube measures _____ pressure.	CO5	Remember
85	Rotameter is a variable area flow meter. (True/False)	CO5	Remember
86	Which measures very low pressure? (a) Bourdon (b) McLeod (c) Dead weight (d) Diaphragm	CO5	Remember
87	Bourdon tube is used for _____ pressure.	CO5	Remember
88	Bellows gauge is suitable for vacuum measurement. (True/False)	CO5	Understand
89	Load cell uses _____ (a) LVDT (b) Strain gauge (c) Thermistor (d) Encoder	CO5	Remember
90	Proving ring measures _____.	CO5	Remember
91	Hydraulic dynamometer measures torque. (True/False)	CO5	Understand
92	Which dynamometer absorbs power? (a) Prony brake (b) Eddy current (c) Rope brake (d) All	CO5	Analyze
93	Transducer converts _____ energy into electrical.	CO5	Remember
94	Piezoelectric transducer is suitable for static measurement. (True/False)	CO5	Analyze
95	Strain gauge factor depends on (a) Length (b) Material (c) Width (d) Temperature	CO5	Understand
96	Rosette strain gauge measures _____ strain.	CO5	Remember

97	Hot wire anemometer measures air velocity. (True/False)	CO5	Remember
98	Magnetic flow meter works on (a) Faraday's law (b) Ohm's law (c) Newton's law (d) Bernoulli	CO5	Understand
99	Torque is measured in _____.	CO5	Remember
100	Force measurement is a static measurement. (True/False)	CO5	Understand

THEORY TYPE QUESTION

1	Define metrology and explain its importance.	CO1	Understand
2	Differentiate between inspection and metrology.	CO1	Analyze
3	Explain precision and accuracy with suitable examples.	CO1	Understand
4	Define sensitivity, repeatability and hysteresis.	CO1	Remember
5	Explain systematic and random errors in measurement.	CO1	Understand
6	Classify linear measuring instruments with examples.	CO1	Remember
7	Explain construction and working of Vernier caliper.	CO1	Understand
8	Explain least count of Vernier caliper and its calculation.	CO1	Apply
9	Explain construction and working of outside micrometer.	CO1	Understand
10	Compare Vernier caliper and micrometer.	CO1	Analyze
11	Explain telescopic gauge with applications.	CO1	Understand
12	Explain dial gauge and its applications.	CO1	Understand
13	Explain slip gauges and their classification.	CO1	Remember
14	Explain wringing of slip gauges.	CO1	Understand
15	Explain use of slip gauges for linear measurement.	CO1	Apply
16	Explain universal bevel protractor.	CO2	Understand
17	Explain optical bevel protractor.	CO2	Understand
18	Explain sine bar principle and applications.	CO2	Understand
19	Explain angle measurement using sine bar.	CO2	Apply
20	Explain working of autocollimator.	CO2	Understand
21	Define limits, fits and tolerances.	CO3	Remember
22	Explain hole basis and shaft basis system.	CO3	Understand
23	Explain plug and ring gauges.	CO3	Understand
24	Explain Taylor's principle of gauge design.	CO3	Understand
25	Explain straightness measurement methods.	CO3	Apply
26	Explain flatness measurement methods.	CO3	Apply
27	Explain squareness measurement methods.	CO3	Apply
28	Explain roundness measurement using V-block.	CO3	Apply
29	Define surface roughness and waviness.	CO3	Remember
30	Explain CLA and RMS value.	CO3	Understand
31	Explain Talysurf.	CO3	Understand
32	Define screw thread and thread nomenclature.	CO4	Remember
33	Explain errors in screw threads.	CO4	Understand

34	Explain pitch measurement of screw thread.	CO4
35	Explain effective diameter measurement.	CO4
36	Explain two-wire and three-wire methods.	CO4
37	Explain internal thread measurement.	CO4
38	Define gear terminology.	CO4
39	Explain gear tooth thickness measurement.	CO4
40	Explain gear tooth form measurement.	CO4
41	Explain LVDT with construction and working.	CO5
42	Explain capacitive displacement transducer.	CO5
43	Explain optical encoder.	CO5
44	Explain mechanical tachometer.	CO5
45	Explain eddy current tachometer.	CO5
46	Explain stroboscopic tachometer.	CO5
47	Classify temperature measuring instruments.	CO5
48	Explain resistance thermometer.	CO5
49	Explain thermocouple.	CO5
50	Explain pyrometer.	CO5

	OBJECTIVE TYPE QUESTION	THEORY TYPE QUESTION	UNIT
QNO.	1 -20	1 -10	UNIT 1
	21-40	11 -20	UNIT 2
	41-60	21 -30	UNIT 3
	61-80	31-40	UNIT 4
	81-100	41 -50	UNIT 5

Apply
Understand
Understand
Understand
Remember
Apply
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Remember