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Course: B. Voc, Program: Production-Tool and Die Manufacturing
Subject: Measurement and Metrology, Code: ME-503
Semester: III

Time: 03 Hours

Max Marks: 35

Instructions to the Students:

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of short answer type. All questions are compulsory. Each question carries 1 marks.
3. Section B comprises 8 long answer type questions out of which students must attempt any 5. Each question carries 5 marks.
4. Do not write anything on the question paper.

Q.No.	SECTION –A (SHORT ANSWER TYPE QUESTIONS)	Marks
1.	a Let the atmospheric pressure at sea level is 0.7m of mercury. Convert this pressure in terms of height of water (in meters).	(1)
	b What are the two basic properties needed to define measurement completely?	(1)
	c What does 0.8 represents in the “M5*0.8 4g6g”?	(1)
	d Differentiate accuracy and precision?	(1)
	e Lux is the unit of which physical quantity?	(1)
	f What is the advantage of a slip gauge?	(1)
	g Which gauge is used to check the internal diameter of a hole?	(1)
	h A shaft is to be manufactured to a diameter of $40^{+}_{-} 0.02$ mm. What is the minimum and maximum dimension of shaft?	(1)
	i What is Candela?	(1)
	j What do you mean by surface finish	(1)

SECTION –B (LONG ANSWER TYPE QUESTIONS)

2. What is comparator? Explain any one mechanical comparator with help a suitable diagram? (5)
3. Write a short note on: (5)
 - Errors in measurement

- Fundamental units of measurement

4. What is pressure? Explain construction and working of Bourdon tube pressure gauge. (5)

5. (5)

	Increment
1 piece (1.005) mm	
9 pieces (1.001-1.009) mm	0.001 mm
49 pieces (1.01-1.49mm)	0.01 mm
49 pieces (0.5- 24.5) mm	0.5 mm
4 pieces (25-100) mm	25 mm

A slip gauge set with 112 pieces is used (as given above), build up the given dimensions with minimum number of slip gauges- 29.758 mm & 57.435

6. Explain the following: (5)

- Interchangeability
- Limits, Fits & Tolerance

7. What do you mean by GD & T? Discuss some of the parameters of measurement of GD & T in details. (5)

8. While measuring the major diameter of an external thread, a 30.5 mm diameter plain plug gauge is used as standard. The micrometre readings over the plug gauge and thread are 15.376 and 13.521 mm respectively. Calculate the thread major/minor diameter. (5)

9. What is Metrology? Why measurement is needed. Explain any 3 Dynamic characteristics of an instrument. (5)

===END OF PAPER===