

Seat No. **OCT-NOV 2025 WINTER EXAMINATION****1154 B.Tech. CBCS****Sub. Name: Metrology and Quality Control****Sub. Code: 81525/81802****Day and Date: Monday ,15-12-2025****Total Marks: 70****Time: 10:30 AM To 01:00 PM**

- Instructions:**
1. All questions are compulsory
 2. Assume suitable data wherever necessary and mention it boldly
 3. Draw neat labelled diagrams wherever necessary
 4. Use of Scientific calculator is allowed

Q1) Solve any two**[12]**

1. The slip gauge set M38 consist of the following gauge blocks.

[6]

Range	Steps	Pieces
1.005	-	1
1.01-1.09	0.01	9
1.1-1.9	0.1	9
1.0-9.0	1.0	9
10.0-100.0	10.0	10
Find out a)29.875 b)15.09 c)101.005 d)34.87		

2. Short note on

[6]

- a)Accuracy
- b)Precision
- c)Need of Inspection

3. Differentiate hole basis and shaft basis system, Which one is preferable & Why?

[6]**Q2) Solve any two****[12]**

1. Describe with neat sketch setup of a sine bar for measurement of a taper cylindrical job. **[6]**
2. Explain construction and working principle of Dial Indicator with neat labeled diagram. **[6]**
3. Explain the construction and working principle of the Pneumatic comparator (Solex gauge) with neat labelled diagram. **[6]**

Q3) Solve any two**[12]**

1. Explain the construction and working of CMM. [6]
 2. Explain the principle of interferometer. [6]
 3. In the measurement of roughness height of 20 successive peak and troughs where measure from a datum and where, 35, 25, 40, 22, 35, 18, 42, 32, 42, 21, 37, 18, 35, 18, 42, 25, 35, 22, 36, 18 in μm . If the measurement where obtained over a length of 20mm. Determine the CLA (RA) & RMS value through the surface. [6]
- Q4) Solve any two [12]**
1. Explain the construction, working, advantages, disadvantages and applications of the Gear tooth calliper (Gear tooth vernier calliper) [6]
 2. Explain rolling test of gears. [6]
 3. Explain Backlash. Discuss important factors consideration while establishing backlash tolerance. [6]
- Q5) Solve any two [10]**
1. What are the advantages and limitations of Quality Circles? [5]
 2. Differentiate between the inspection and quality control. [5]
 3. What is meant by quality policy? Give its important features. [5]
- Q6) Solve any two [12]**
1. List the desirable considerations for selecting a sample. [6]
 2. Differentiate between single, double and multiple sampling plans. Also give their relative merits and demerits. [6]
 3. In an automatic filling process, 500 gms of certain liquid was to be filled in bags. The permissible variation is ± 5 gms. For investigating the process capability 5 bags were taken at random from each batch for 10 successive batches and the following results were found: [6]

Batch	1	2	3	4	5	6	7	8	9	10
Mean gms.	501	498	500	503	503	500	497	502	503	496
Range	3	4	2	4	3	5	4	2	6	4

Establish control chart limits for X bar and R charts. Plot the charts and interpret the meaning. Take $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.11$. Will the process be able to meet the specifications?

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (1154) B.Tech. CBCS (81525) Metrology and Quality Control Part 3 SEM 6
- 2] (101) Bachelor of Engineering (81802) Metrology and Quality Control Part 3 SEM 6