22450

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

a) Define the term Engineering Metrology.

b) State wave length standard advantages and disadvantages.

c) List any four instrument for angular measurement.

d) Draw neat sketch of metric screw thread profile.

e) Define least count and state it's formula.

f) Define primary texture and secondary texture.

g) Define calibration and tracebility.

Marks

2. Attempt any THREE of the following : **12**

a) Differentiate between unilateral and bilateral tolerance.

b) Differentiate between Line standard and End standard.

c) Explain with neat sketch sigma comparator.

d) Differentiate between precision and accuracy.

3. Attempt any THREE of the following : **12**

a) What is the meaning of $50\,H_7d_6$ and also state the type of fit.

b) Explain with neat sketch Taylor's principle of gauge design.

c) Explain with sketch parkin gear tester method.

d) State the pitch error in thread and explain any one with neat sketch.

4. Attempt any THREE of the following : **12**

a) Explain with sketch the constant chord method for gear tooth thickness measurement.

b) Write down the steps to measure the effective diameter of screw thread with neat sketch.

c) An angle of 57º, 6' 9" is to be developed using standard angle gauge set [1º, 3º, 9º, 27º, 41º] [1', 3', 9', 27'] [3", 6", 18", 30"] and show arrangement with sketch.

d) How angle of 'V' block (included angle) is to measure with the help of clinometer.

e) In the measurement of surface roughness, height of 10 successive peaks and valleys were measured as

Peaks - 45, 42, 40, 30, 35 in microns

Valleys - 30, 25, 25, 24, 18 in microns

Determine Ra value and RMS value.

Marks

5. Attempt any TWO of the following : **12**

a) Draw the following alignment test of lathe machine

i) Levelling of lathe machine

ii) Parallelism of main spindle to saddle movement

b) Explain finger tip test to identify the concave and convex surface by using optical flat and monochromatic light unit.

c) What is the meaning of quality of design and quality of conformance.

6. Attempt any TWO of the following : **12**

a) What is mean by ISO and state the benefits of ISO 9000 series standards.

b) Draw a p-chart and comment on it. A 25 samples of 100 items were inspected, they are as follows.

Sample No.	1	2	3	4	5	6	7	8
No. of defectives	14	22	25	15	20	14	12	24

Sample No.	9	10	11	12	13	14	15	16
No. of defectives	10	17	35	36	16	23	14	06

Sample No.	17	18	19	20	21	22	23
No. of defectives	07	33	17	34	11	16	25

Sample No.	24	25
No. of defectives	36	18

Total number of defectives = 500

c) Draw O.C. curve and explain producer's, risk and consumer's risk.