22450

23124

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 answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

(7) Preferably, write the answers in sequential order.

Marks

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

a) Define comparator.

b) List any four sources of errors in screw thread measurement.

c) Write the least count of vernier caliper and micrometer.

d) Classify various angular measurement instruments.

e) Define the terms :–

i) Flatness

ii) Squareness.

with respect to machine tool metrology.

f) Define the term quality.

g) State the meaning of quality of performance.

Marks

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

a) List down any four objectives of metrology.

b) Explain the term selective assembly giving one example.

c) Describe the construction and working principle of floating carriage micrometer.

d) Write a brief description about following:–

i) Surface Plate

ii) V-Block.

e) Explain the terms primary texture and secondary texture.

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

a) Differentiate between precision and accuracy. Give examples of each.

b) Describe various types of fits with their conventional diagrams.

c) Explain the concept of "Interchangeability".

d) Describe with neat sketch, Alignment testing of lathe centres in vertical planes.

e) Explain the term "Concept of zero defects".

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

a) i) Differentiate between line standard and end standard. (Any four points)

ii) Write requirements of good comparators.

b) i) State and explain Taylor's principle of gauge design.

ii) Define and explain the terms, variables and attributes.

c) State the types of CMM. Explain any one in brief.

d) Write the requirements of a good comparator. (Any four points)

Marks

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

a) Describe with neat sketch "The Parkinson Gear Tester".

b) With the help of neat sketch of experimental setup, explain how sine bar is used to measure an angle of a component.

c) i) Write advantages and disadvantages of sampling inspection.

ii) Explain single sampling plan and double sampling plan with respect to their respective acceptance criteria.

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

a) Differentiate between Inspection and Quality Control with suitable examples.

b) Explain with a neat sketch, working principle of Tool Maker's Microscope.

c) i) Name any three angular measurement instruments.

ii) With the help of "Fringe Patterns" explain the testing of following surface using optical flat –

(1) Flat

(2) Convex

(3) Concave.