313316

12425

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) 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 "Metrology".

b) State any four characteristics of good comparator.

c) State "Taylor's Principle" of gauge design.

d) State any four advantages of pneumatic comparator.

e) Define:

i) Primary texture

ii) Secondary texture.

f) Write the classification of temperature measuring instruments.

g) List any four sound characteristics.

P.T.O.

Marks

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

a) Differentiate between line standard and end standard.

b) Explain Parkinson gear tester with neat sketch to measure error in manufactured gear.

c) List minimum number of slip gauges to be brought together to produce an overall dimension of 73.975 mm using a set of 87 pieces The set contains.

Range (mm)	Step (mm)	Pieces
1.005	–	1
1.001 to 1.009	0.001	9
1.01 to 1.49	0.01	49
0.5 to 9.5	0.5	19
10 to 90	10	9
	Total	87

d) Differentiate between thermistor and thermocouple (any 4 points.)

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

a) Explain the method of measurement of external diameter of a round section piece of steel using Vernier Caliper.

b) State the precautions to be taken to make accurate and precise measurement.

c) Explain the principle of measurement of tooth thickness by gear tooth Vernier Caliper.

d) Define transducer. State the classification of transducer.

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

a) State the term 'Interchangeability' and 'Selective Assembly'. Write the importance of interchangeability.

b) Suggest the measuring instrument to measure the following features of external and internal threads.

i) Minor diameter

ii) Effective diameter

iii) Pitch

iv) Thread angle.

Marks

c) Explain with neat sketch the plug gauge showing "Go" and "No Go" end.

d) State methods of evaluation of surface roughness. Explain any one.

e) Explain slow measurement by variable area Rota meter.

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

a) State the meaning of wringing of slip gauges. Write precautions to be taken while using slip gauges.

b) Explain generalised measurement system with the block diagram.

c) Define tachometer. Explain any one contactless technique for speed measurement.

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

a) Explain with neat sketch working of bimetal thermometer. State its advantages.

b) Define load cell. State the applications of strain gauge load cell.

c) Write procedure to measure effective diameter of screw thread using two wire method.