Scheme – I

Sample Question Paper

Programme Name : Diploma in Mechanical Engineering
Programme Code : ME
Semester : Third
Course Title : Engineering Metrology
Marks : 70

22342

Time: 3 Hrs.

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following. 10 Marks

a) Define 'Metrology'
b) List Different Measuring standard
c) State the term" Interchangeability
d) List different methods of measuring Tooth Thickness
e) State the use of "Combination Set"
f) Define "Lay"
g) List the causes of Surface Roughness

Q.2) Attempt any THREE of the following. 12 Marks

a) Differentiate between Precision and accuracy
b) Explain the wringing of Slip gauges with neat sketch
c) Explain Hole basis System? Why it is Preferred
d) Describe the procedure of measurement of tooth thickness using constant chord method with neat sketch

Q.3) Attempt any THREE of the following. 12 Marks

a) Explain parallax error with neat sketch
b) A cylinder of 80mm diameter was placed between the micrometer anvils due to inaccurate placement, the angle between the micrometer and cylinder axis was found to be 1 minute .calculate the amount of error in the measured diameter, take anvil diameter 6mm

c) Distinguish between Line Standard and end Standard

d) Explain with representation of features of Geometrical tolerance in Simple engineering part

Q.4) Attempt any THREE of the following. 12 Marks

a) Draw the labeled diagram of Sigma comparator and explain its working

b) Calculate the diameter of best wire size for M20 x 1.5

c) Suggest a suitable method of inspection for the profile of screw thread with sketches

d) Sketch and Interpret the meaning of various interference fringes patterns observed using optical flat

e) Draw the alignment test of Squareness of Spindle axis of radial Drilling Machine

Q.5) Attempt any TWO of the following. 12 Marks

a) Describe the procedure of measurement of tooth thickness using constant chord method with neat sketch

b) Draw the spur gear showing its terminology

c) An angle of 49° 29' 18" is to be developed by using standard angle gauge set of 13 pieces. Calculate the gauges required and sketch the arrangement

Q.6) Attempt any TWO of the following. 12 Marks

a) The angle of Taper plug gauge is to be checked using sine centre and slip gauges ,Sketch the set up and describe the procedure

b) Explain the construction of Bevel Protractor with neat sketch

c) Draw the following alignment test of Lathe machine

i) Parallelism of tail stock d) Run out of spindle

Scheme – I

Sample Test Paper - I

Programme Name : Diploma in Mechanical Engineering
Programme Code : ME
Semester : Third
Course Title : Engineering Metrology
Marks : 20

22342

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. 08 Marks

a. Define Least count of an Instruments
b. List different sources of errors in the Measuring instruments
c. Define- Line Standard
d. State the Term NABL Certification
e. List Different types of "Fit"
f. List the uses of Snap Gauges

Q.2 Attempt any THREE. 12 Marks

a. Explain terms- Precision and Sensitivity
b. A cylinder of 80mm diameter was placed between the micrometer anvils due to inaccurate placement, the angle between the micrometer and cylinder axis was found to be 1 minute .calculate the amount of error in the measured diameter, take anvil diameter 6mm
c. Differentiate between mechanical and Pneumatic Comparator
d. Explain the need and standard procedure for calibration
e. Explain Hole basis System? Why it is Preferred
f. A shaft of +/- 0.004 mm is to be checked by means of GO and NOGO gauge .Design the dimension of gauge required

Scheme – I

Sample Test Paper - II

Programme Name : Diploma in Mechanical Engineering
Programme Code : ME
Semester : Third
Course Title : Engineering Metrology
Marks : 20

22342

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. 08 Marks

a. Define- Pitch diameter
b. List different types of errors in Gear
c. State the limitation of Sine Bar
d. List different Angular measuring devices
e. State the function of CMM
f. State the principle of Surface roughness Tester

Q.2 Attempt any THREE. 12 Marks

a. Explain the principle of working of 'Parkinson's Gear tester" with neat sketch
b. Draw a neat labelled sketch of screw thread micrometer. State its principle of working
c. Describe the principle of "Interference " with sketch
d. List different sets of angle gauges available in Metrology lab with their values
e. In the measurement of surface roughness, heights of 10 successive peaks and valleys were measured from a datum as

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

   Valleys 30,25,25,24,18 microns

   Determine the Ra Value
f. Explain how the straightness of lathe bed may be checked by using spirit level