

Roll No.

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (PE) (E-III) (Sem.-3)

METROLOGY & INDUSTRIAL INSPECTION

Subject Code : PE-521

M.Code : 39020

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.
3. Assume missing data.

1. a) What is end standard? How it is different from 'Line Standard'? Explain with examples. 2+5
b) Explain the term 'limits and fits' with suitable example. 6
c) State the design procedure for a suitable 'GO' and 'NO GO' plug gauge for measurement of bored hole of $\frac{25.1}{25.0}$ mm diameter. 7
2. a) How the surface roughness heights are measured by Taylor Hobson Telesurf Instrument? Explain with a flow chart. 10
b) What are plastic replica techniques? How these techniques are used in measurement of surface finish? Explain. 10
3. a) What is Comparator? Write the name of different types of comparators. Describe any one suitable comparator from your answer that can be used for ruling and calibration of standard scales. 2+2+8
b) Explain the working principle of optical comparator with a suitable sketch. 8
4. a) What is Gauge length interferometer? How it is different from absolute length gauge interferometer? Write the procedure for obliquity correction. 2+2+6
b) Explain briefly the calibration of gauges by interference method. Give simple symmetric block diagram in support of your answer. 10

5. a) What are the different elements of screw threads required to be inspected and measured? Describe a suitable measuring method for inspecting the screw threads. Give simple sketch of a screw thread showing different elements in support of your answer and describe. 12
- b) Describe the procedure and advantages of three wire measurement method over one wire measurement method. 8
6. a) Write the name of the different measuring equipments. Explain any one from your answer and write the specific application of the equipment. 2+6
- b) What are Tolerances? Write the significance and importance of tolerances in measurement and industrial inspection. 2+6
- c) What are the measuring methods used for run out checking? Explain. 4
7. a) Write the main objectives and functions of quality control management in measurement and inspection technology. 8
- b) State and explain the different kind of inspections. Explain the detail procedure for selection of gauging equipments. 6+6
8. Write short notes on the following :
 - a) Flatness and squareness testing 7
 - b) Pneumatic comparators and calibration 7
 - c) Measurement of gears profiles. 6

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.