(3 Hours)   Total Marks-80

NB: - 1. Question No.1 is compulsory
       2. Solve any three questions from remaining five
       3. Assume suitable data wherever necessary

Q.1   Answer the following questions:

   a) Draw and explain various surface roughness symbols.   04
   b) Compare Mechanical and Pneumatic comparators.   04
   c) Distinguish between p chart and c chart.   04
   d) Explain with neat diagram for GO-NOGO plug gauge, Taylor's   04
      principle of Gauge Design.
   e) The divisions on main scale of a vernier caliper are 0.5mm apart. The   04
      vernier has 100 divisions equal in length to 98 main scale divisions.
      What is the accuracy of the instrument?

Q.2
   a) Describe with neat sketch two wire method of measuring the effective   10
      diameter of screw threads?
   b) By using optical flat and monochromatic light explain the procedure to 10
      determine i) whether the given surface is flat or curved. ii) whether the
      curved surface is convex or concave.

Q.3
   a) With the help of graphical representation explain parameters R_a, R_y, R_z 10
      and sampling length used in surface texture measurement.
   b) Define and explain various types of cost of quality with suitable   10
      examples.

Q.4   a) Draw the conventional diagram of limits and fits and explain the terms
          such as Basic Size, Upper deviation, Lower deviation, Fundamental
          deviation and Zero line.   05
       b) Why is it necessary to give tolerance on engineering dimension? Give   05
          an example of both a unilateral and bilateral tolerance.
       c) Explain with neat sketch working of Tool Makers Microscope.   10

Q.5
   a) Describe the Parkinson's Gear tester with neat labeled diagram and   10
      state its limitations.
   b) Compare X bar chart with R charts. Discuss the circumstances in which   10
      either of the two or a combination of these will be used for purpose of
      control.

Q.6
   a) Explain various types of sampling plans which are in practice in   10
      industry with their respective acceptance criteria.
   b) Explain the Operating Characteristic curve with reference to sampling   10
      inspection. Also show various regions in the same with their suitable
      meaning.