

Instructions:

- (1) Question No.1 is compulsory and Answer 3 Questions remaining 5 Questions.
- (2) Assume suitable data wherever necessary
- (3) Diagram and sketches explanations are right to reserve full marks

Q1 Answer Any Four Questions

- a. Short notes on Go and NO-GO Gauges with sketches **20**
- b. Definition of quality and quality control
- c. Short note on principle of interference with diagram
- d. Surface Roughness measuring parameters R_a , R_z , R_y and RMS value.
- e. 3-D coordinate measuring machine

- Q2**
- a. Derive an expression for determination of effective diameter of threads by using two wire method **10**
 - b. Define Comparators. Explain mechanical Comparators with neat diagram and state their characteristics. **10**

- Q3**
- a. The following are the inspection results of 15 samples of size 200 each. Calculate the average fraction defectives and 3 sigma control limits. Draw the control chart and state whether the process is in statistical control. **10**

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of Defective	9	7	14	15	8	7	9	11	16	12	26	18	11	8	10

- b. Explain Tool Maker's Microscope with sketches **10**

- Q4**
- a. Explain the floating carriage micrometer with principle, construction, and measurement of threads? **10**
 - b. The graphical trace of a surface roughness profile was measured by means of a planimeter over a length of 120mm. The following areas in mm^2 were recorded: 2260, 2240, 2380, 2315, 2275, 2280, 2290 and 2330. The vertical magnification was X5000, calculate the R_a , CLA value **10**

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- Q5 a. A25mm H8-f7 fit is to be checked. The limits of size for H8 hole are: high limit 25.033mm, low limit 25.000. The limits of size for f7 shafts are: high limit 24.980mm, low limit 24.959mm. Taking gauge maker's tolerance to be 10% of the work tolerance, Design plug gauge and snap gauge to check the fit.
- b. Write a short note on : (a) AQL (b) LTPD (c) Producer's risk (d) Consumer's risk

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Q6 Answer Any Two Questions

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- a. Explain the Parkinson Gear Tester with sketches in Gear profile checking process
- b. Explain the pneumatic comparator with principle, construction, and operation of comparator?
- c. Explain various SQC Tools in quality engineering
