

B.Tech Sem – VI (2007 Course) (Mechanical Engg.)/(Production Engg.) : WINTER - 2017

SUBJECT : METROLOGY AND QUALITY CONTROL

Day : **Wednesday**
Date : **22/11/2017**

Time : **10.00 AM TO 01.00 PM**
Max. Marks : **80**

W-2017-2526

N. B. :

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of remaining questions attempt **ANY TWO** questions from each Section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of calculator is **ALLOWED**.
- 4) Answers to both the sections should be written in **SEPARATE** answer books.
- 5) Assume suitable data, if necessary.

SECTION - I

- Q. 1 a)** Define the following terms: **(06)**
- i) Straightness
 - ii) Tolerance
 - iii) Flatness
- b)** Explain the difference between tolerance and accuracy. **(04)**
- c)** Discuss the manufacturing process of slip gauges. **(04)**
- Q. 2 a)** Explain the procedure to find out the angle of tapered cylindrical component. **(06)**
- b)** Explain with neat sketch vernier caliper and micrometer screw gauge. **(07)**
- Q. 3 a)** Designs and draw a general purpose Go and No Go gauge for inspecting 25D8. Use data ratio **(08)**
- $i = 0.45 \sqrt[3]{D} + 0.001 D$ (D is in mm) μm
- $D = 16 D^{0.44}$
- The Tolerance Value $IT 8 = 25 i \mu m$
- diameter range 18 to 30 mm
- b)** Classify the different types of gauges and explain plug gauge with neat sketch. **(05)**
- Q. 4 a)** Explain with neat sketch the procedure to measure effective diameter by using floating carriage micrometer. **(07)**
- b)** Explain with neat sketch the phenomenon of interferometer to measure flatness. **(06)**

P. T. O.

SECTION - II

- Q. 5** a) Explain the quality characteristics. (05)
b) What are the benefits of ISO 9000? (05)
c) What is meant by MTBF? (04)

- Q. 6** a) Discuss in detail the Demings and Juran's approaches for quality. (06)
b) The following is inspection result of slip rings in a work of six days. Using each day's output as a day's sample, construct appropriate control chart and state whether the process is in control. (07)

Day	1	2	3	4	5	6
Quantity Produced	540	484	512	528	532	404
No. of Defectives	20	13	11	15	19	12

- Q. 7** a) Explain the following terms: (06)
i) Cause and effect diagram
ii) Pareto diagram
b) Explain in detail design of experiment. (07)
- Q.8** a) Discuss the requirement of ISO 14001. (06)
b) Explain ISO-9000 Quality system standards (07)

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