

**B.TECH SEM – VI (2007 COURSE) (MECHANICAL
ENGG.)/(PRODUCTION ENGG.) : SUMMER - 2018**

SUBJECT: METROLOGY & QUALITY CONTROL

Day : **Wednesday**
Date : **06/06/2018**

S-2018-2731

Time : **02.30 PM TO 05.30 PM**
Max. Marks : 80

N.B.:

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from Section – I and Section - II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Draw neat and labeled diagrams **WHEREVER** necessary.
- 5) Assume suitable data, if **necessary**.

SECTION - I

- Q.1** a) State the difference between precision and accuracy. (05)
b) State the advantages of comparators. (05)
c) Discuss the RMS and CLA values (04)
- Q.2** a) Explain the procedure of measuring angle of a component having angle on one side? (06)
b) Explain the use of Autocollimator for carrying out measurement? (07)
- Q.3** a) Explain the following (06)
i) Straightness ii) Parallelism iii) Circularity
b) Design a general purpose Go and No Go gauge for inspecting 20D₈ using the following data. (07)
i) $i = 0.45\sqrt[3]{D} + 0.001D$ (D is in mm)
ii) Diameter range is between 18 to 30.
iii) The fundamental deviation $D = 16D^{0.44}$
iv) IT8=25i
- Q.4** a) What are the different methods to measure surface roughness? Explain any one in detail? (06)
b) M20x2.5 plug screw gauge was checked for effective diameter using floating carriage micrometer and readings were taken as below. (07)
i) Diameter of standard cylinder is 18.0010.
ii) Micrometer reading over standard cylinder with 2 wires of same diameter is 15.6420 mm.
iii) Micrometer reading over plug screw gauge with 2 wires of same diameter is 15.2616 mm.
Best wire size was chosen for measurement. Calculate the effective diameter of the gauge. Neglect rake and compression error.

SECTION - II

- Q.5** a) Discuss the Deming's approach for quality. (05)
b) Explain with neat sketch the cause and effect diagram? (05)
c) Discuss the benefits of environmental management system. (04)
- Q.6** a) Explain in detail Failure modes and effect analysis? (06)
b) Discuss with neat sketch the Operating Characteristic Curve. (07)
- Q.7** a) Discuss in detail the 'House of Quality'. (07)
b) Explain in detail the concept of Quality Circle? (06)
- Q.8** a) What is ISO 14000? List its requirements and benefits. (07)
b) Explain in detail the concept of Quality audit and its documentation. (06)

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