

Total No. of Questions : 8]

SEAT No. :

P717

[Total No. of Pages : 2

[5869]-389

**S.E. (Robotics & Automation Engineering)**  
**METROLOGY AND QUALITY ASSURANCE**  
**(2019 Pattern) (Semester - IV)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Assume suitable data if necessary.
- 3) Use of electronic pocket calculator is allowed.
- 4) Neat diagrams must be drawn wherever necessary.

**Q1) a)** Write short notes on Talysurf for surface roughness measurement with systematic diagram. [9]

b) Explain Tomlinson surface tester with neat sketch. [8]

OR

**Q2) a)** Explain concept of RMS and CLA value for surface roughness measurement. [9]

b) Explain terms in gear with neat diagram,

- |                     |                     |
|---------------------|---------------------|
| i) Module           | ii) Diametral pitch |
| iii) Circular pitch | iv) Pressure angle  |
- [8]

**Q3) a)** Explain histogram or frequency distribution diagram [8]

b) What is cost of quality? Explain its types. [9]

OR

**Q4) a)** Explain following SQC tools

- |                  |             |
|------------------|-------------|
| i) X and R chart | ii) P chart |
|------------------|-------------|
- [8]

b) Explain Process Capability Index [9]

**P.T.O.**

- Q5)** a) Explain function, methodology, and advantages of quality audit. [9]  
b) Write short notes on [9]  
i) Kaizen  
ii) Kanban

OR

- Q6)** a) Explain ISO 9000 standards in detail. [9]  
b) Explain in detail what is TQM and give its significance. [9]

- Q7)** a) Write short notes on steps to implement quality policy. [9]  
b) What is Quality Management System (QMS). [9]

OR

- Q8)** a) Write short notes on Just in time (JIT). [9]  
b) Explain quality function deployment and its benefits. [9]

