

Total No. of Questions : 9]

SEAT No. :

P3478

[Total No. of Pages : 2

[5560]-114

T.E. (Mechanical)

METROLOGY & QUALITY CONTROL

(2012 Pattern) (Semester - I) (302044)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *All questions are compulsory. ie. (Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8)*
- 3) *Q.9 is compulsory*
- 4) *Assume suitable data, if necessary.*
- 5) *Use of calculator is allowed.*
- 6) *Figures to the right side indicate full marks.*

Q1) a) Explain Gauge R and R concept? And interchangeability concept. **[5]**

b) Explain different types of errors in measurement. **[5]**

OR

Q2) a) Write different types of comparators, explain Pneumatic comparator. **[5]**

b) Define surface texture? Explain difference between primary and secondary texture. **[5]**

Q3) a) Explain with neat sketch of Gear tooth vernier measurement. **[5]**

b) Explain Floating Carriage Micrometer in thread measurement. **[5]**

OR

Q4) a) Explain juran Trilogy approach in details. **[5]**

b) State Taylor's principle of gauge design, Explain types of gauges and gauge design for shaft. **[8]**

P.T.O.

Q5) a) Explain Seven Quality Tools. [8]

b) Explain Quality Circle. [8]

OR

Q6) a) Write a short note on (any two) [8]

i) DMAIC

ii) Kaizen

iii) Poka yoke

b) Explain ISO - 9000 Quality system standards with its type. [8]

Q7) a) Five thermostatic control are tested to determine On temperature. The measured value are 344, 338, 342, 335 and 336 degree. These values constitutes first subgroup for certain control chart.

Computer the athematic mean, median, range, standard deviation and variance of this subgroup. [8]

b) Explain in detail with flowchart single sampling and double sampling plan. [8]

OR

Q8) a) Control Chart for mean \bar{X} and R are maintained on tensile strength in Kg. The subgroup size is 5. The values of mean \bar{X} and R are computed for each subgroup. After 25 subgroup average $\sum \bar{X} = 2005$ and $\sum R = 515$. Compute the control limit for \bar{X} . If the process is statistical control. Determine the process capability. Take $d_2 = 2.326$ for subgroup of 5 items. [10]

b) Explain OC Curve and its characteristics. [6]

Q9) Write a short note on (any four) [18]

a) FMECA

b) Zero defect

c) TPM

d) 5 S

e) JIT

