

Total No. of Questions : 9]

SEAT No. :

P3251

[Total No. of Pages : 2

[5353] - 114
T.E. (Mechanical)
METROLOGY AND QUALITY CONTROL
(2012 Pattern)

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) *Assume suitable data if necessary.*
- 4) *Use of calculator is allowed.*
- 5) *Figures to the right side indicate full marks.*

Q1) a) Explain traceability, selective assembly and interchangeability. **[6]**

b) Explain different types of errors in measurement. **[4]**

OR

Q2) a) State different types of comparators, explain sigma comparator in detail. **[5]**

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

Q3) a) Explain different types of errors in Gear measurement. **[4]**

b) Explain two wire method in thread measurement. **[6]**

OR

Q4) a) Explain quality costs in details. **[5]**

b) State Taylor's principle of gauge design, Draw progressive type plug and snap gauge. **[5]**

Q5) a) What do you mean by PDCA and PDSA? Explain. **[8]**

b) Explain in details Seven New quality control tools. **[8]**

P.T.O.

OR

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

- i) Zero Defect
- ii) Kanban
- iii) Six sigma

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

Q7) a) Ten samples of parts were taken from a production line for 100% inspection, each sample containing 300 parts. The total number of defective was 350. Compute upper and lower control limit. [5]

- b) Explain analysis of out of control condition referring control charts. [5]
- c) Explain in detail with flowchart single sampling and double sampling plan. [8]

OR

Q8) a) A new process is started and the sum of sample standard deviations for 25 subgroups of size 4 is 750. If the specifications are 700 ± 80 , what is process capability index? What action would you recommend? Take for four samples factor for center line = $C_4 = 0.9213$. [6]

- b) Ten castings were inspected in order to locate defects in them. After inspection total 37 defects were found. Compute control limit for C chart. [4]
- c) Write note on PPAP and OC curve. [8]

Q9) Write a short note on (any four) [16]

- a) Cause and Effect diagram.
- b) Pareto diagram.
- c) Kaizen
- d) TPM
- e) 5 S
- f) JIT

