Total No. of Questions : 9]

SEAT No. :

P2839

[Total No. of Pages : 2

[4958]-1012
T.E.(Mechanical)
METROLOGY AND QUALITY CONTROL
(2012Course) (End Sem)

Time :2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

Q1) a) Differentiate between systematic errors and random errors. **[5]**

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

OR

Q2) a) Describe with neat sketches of auto-collimator and sine bar. **[5]**

b) State different types of linear and angular measuring instruments, explain any two with example. **[5]**

Q3) a) State and explain Taylor's Principle of Gauge Design with example. **[5]**

b) Optical arrangement of interferometer for testing flatness of surfaces. **[5]**

OR

Q4) a) What is surface texture? State different methods to analyze surface trace **[5]**

b) A machine operator needs a gauge for checking the diameter of bores being machined to diameter 20 + 0.06 mm. What should be the dimensions (diameter) of the gauge if unilateral systems of tolerances are incorporated? Assume gauge tolerance and wear allowance each as 10% of work tolerance. **[5]**

P.T.O.

Q5) a) Explain PDCA & PDSA Cycle. **[8]**

b) Describe different quality costs. **[8]**

OR

Q6) a) Write short note on: Juran's Trilogy. **[8]**

b) Differentiate between Quality Assurance & Quality control. **[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 defection was 350. Compute upper and lower control limit **[5]**

b) Explain analysis on out of control condition refering control charts. **[5]**

c) Explain in detail with flow chart single sampling and double sampling plan. **[8]**

OR

Q8) a) A new process is started , and the sum of sample standard deviation 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 centeline = c4 = 0.9213 **[6]**

b) Ten castings were inspected in order to locate defect in them after in spection total 37 defects were found. Compute control limit for c-Chart. **[4]**

c) Write note on PPAP and OC curve. **[8]**

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

a) Cauuse & effect diagram

b) Pareto diagram

c) Kaizen

d) TPM

e) 5 s

f) J I T