

Name :

Roll No. :

Invigilator's Signature :

**CS/B.TECH (CT)/SEM-7/HU (CT)-702/2012-13
2012**

QUALITY ASSURANCE

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

- i) ABC Analysis is related to
 - a) Marketing Management
 - b) Materials Management
 - c) Production Management
 - d) Financial Management.
- ii) JIT is related to
 - a) Quality control
 - b) Maintenance
 - c) Inventory control
 - d) HR.



- iii) EOQ is used in
 - a) Human Resource Management
 - b) Materials Management
 - c) Energy Management
 - d) Quality Management.
- iv) A team wants a technique for determining and displaying priorities based on frequency of various defect types. They should use
 - a) written and diagrammed work instructions
 - b) cause and effect diagrams
 - c) Pareto chart
 - d) Matrix diagram.
- v) Accurate process means
 - a) closeness between target and average
 - b) wide spread of values
 - c) narrow spread of values
 - d) none of these.



vi) A team wants a technique for obtaining a large number of possible reasons for excess variation in a dimension. They should use

- a) Pareto diagram
- b) Gantt chart
- c) Brain Storming
- d) PDCA cycle.

vii) C_{PK} index greater than 1 means

- a) no non-conformity
- b) there may be non-conformity
- c) large non-conformity
- d) none of these.

viii) Histogram helps us to know

- a) vital few from trivial many
- b) voice of customers
- c) shape, centering and spread of data distribution
- d) none of these.



ix) Standard deviation is the spread from

- a) average
- b) median
- c) mode
- d) none of these.

x) Product is checked with 'GO' & 'NOGO' gauges data which is generated, falls under

- a) attribute
- b) variables
- c) both (a) and (b)
- d) none of these.

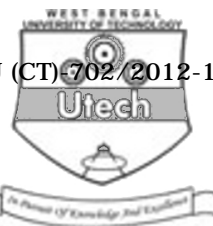
GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following.

$$3 \times 5 = 15$$

2. Brain Storming.
3. Explain six sigma with example.
4. Function of Quality loop of an organisation.
5. Documentation Track of ISO9001 and Handling of non-conforming products.



GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

6. Give two definitions of quality. Explain with suitable example stated and implied needs. Draw a run chart showing UCL, LCL, USL & LSL. Why two-tier layers are needed ? Write the steps of continual improvement. Draw a Pareto diagram with the following information :

Pin holes 2%, Warpage — 1.5%, Bad Handling — 0.8%,
Dunting — 2.5%, Yellow core — 4.5%, Crack — 7%,
others — 0.5%. $2 + 3 + 2 + 8$

7. Differentiate between chance and assignable causes with suitable examples. Discuss different types of quality characteristics and their advantages and disadvantages. Show graphically (run-chart) situations when process under the influence of chance causes and under the influence of assignable causes. We say that when C_p is greater than 1, process is capable but there is case that process is not capable but C_p is greater than 1. Explain it with suitable diagram. $3 + 4 + 2 + 6$

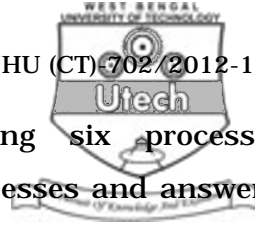


8. What do you mean by statistical control ? When you need to study capability of a process ? Define accuracy and Precision. Draw normal distribution curve and show the position of LSL, USL, $\bar{X} - 3\sigma$ and $\bar{X} + 3\sigma$ in a situation when $USL - LSL > 6\sigma$. Explain with the diagram the following situations :

- i) Accurate and precise process
- ii) Inaccurate but imprecise process
- iii) Inaccurate but precise process
- iv) Accurate but imprecise process. 1 + 3 + 3 + 8

9. Write the equation for standard deviation for samples. Explain the actions to be taken with diagram when

- i) process capability is smaller than specified tolerance
- ii) process capability is equal to specified tolerance
- iii) process capability is more than the specified tolerance.



Following table provides data regarding six process. Calculate C_p and C_{pk} indices for the processes and answer the below mentioned questions :

Process	USL	LSL	Mean	Standard	C_p	C_{pk}
A	525.00	510.00	516.00	2.50		
B	112.00	100.00	107.00	2.50		
C	12.80	12.20	12.50	0.125		
D	2.66	2.00	2.27	0.10		
E	4.52	4.25	4.40	0.05		
F	8.45	8.24	8.33	0.05		

- Which of the six processes is most capable ?
- Which is the least capable among the processes ?
- Which is the most accurate process ?
- Which is the least accurate process ?

1 + 6 + 8

=====