	Utech
Name:	
Roll No.:	A Grant of Cambridge and Cambridge
Invigilator's Signature :	

TOTAL QUALITY MANAGEMENT

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 any ten of the following : $10 \times 1 = 10$
 - i) When a process is considered capable of producing a product without defects within specification limits, the process capability index (Cp), statistically corresponds to
 - a) > 1.0

b) < 1

c) 1

- d) 0.
- ii) In relation to quality, Kaizen is the word used to mean
 - a) Just in time
 - b) Continuous improvement
 - c) Systematic process
 - d) Random sampling.

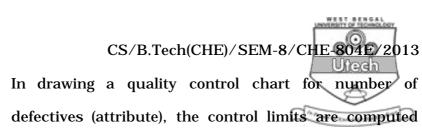
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- iii) The 95% confidence interval means the following % level of significance
 - a) 5

b) - 5

c) 100

- d) 0.
- iv) In total quality management of an organisation, a Run Chart focuses
 - a) more on the acceptable limits of a process
 - b) more on time pattern in the variation of a process
 - c) on the customers' specification limit
 - d) on the consumer's risk.
- v) The term "ISO" in quality management refers to
 - a) quality system implementation in an organisation
 - b) quality control & measurement in a manufacturing or service organisation
 - c) implementation of statistical quality control techniques
 - d) building of quality standards in the products & services of the organisation.



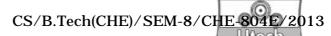
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- based on
- a) Gaussion distribution

vi)

- b) chi-square distribution
- c) Poisson distribution
- d) binomial distribution.
- vii) Six Sigma process capability corresponds to defects per million of the magnitude
 - a) 5 b)
 - c) 266 d) 6.
- viii) It is the only resources which do not depreciate over a period of time
 - a) raw materials resources
 - b) equipments & machineries
 - c) the human resources
 - d) energy resources.

ix)	Which of the following is variable chart?				
	a)	u chart	b)	np-chart	
	c)	R-chart	d)	c-chart.	
x)	When the process capability is more than the specified				
	tolerance, then the rejections are				
	a)	Less	b)	High	
	c)	Very less	d)	Nil.	
xi)	Pareto analysis is a statistical technique in decision				
	making that is used for				
	a)	selection of a limited		per of tasks that produce	
	b)	overall examination of	of the	total process for fault	
	c)	a failure mode analys	is		
	d)	fault tree analysis.			
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- xii) The concept of total quality management includes
 - a) involvement of working personnel only
 - b) involvement of top management only
 - c) involvement of the customers & vendors
 - d) all of these.
- xiii) Which set of 'Three Ps' of quality in a business is appropriate?
 - a) Power, Process & Programme
 - b) People, Product & Process
 - c) Process, Probability & Progress
 - d) Processs, Product & Parameter.

GROUP - B (Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- 2. Enumerate 7-S principles of continuous quality improvement cycle.
- 3. What is the meaning of the term 'Kaizen' in Total Quality Management?
- 4. Explain the implications of continuous improvement with the help of Deming's wheel in terms of PDCA cycle.

- 5. It has been decided to sample 100 items at random from each large batch and to reject the batch if more than 2 defectives are found. The acceptable quality level is 1% and the unacceptable quality level is 5%. Find the Producer's and Consumer's risks.
- 6. What are the differences between manufacturing and service organizations in regard to quality activities of the organisations?

GROUP - C (Long Answer Type Questions)

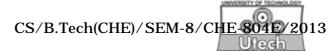
Answer any *three* of the following. $3 \times 15 = 45$

3

5

- 7. a) What are the different quality standards known in the industries/service sectors?
 - b) What does ISO 9000 standards stand for?
 - c) Mention a few important standards with their scope of implementation areas under the family of ISO 9000. 5
 - d) What are the activities involved in implementing ISO 9000 quality system?
- 8. a) What is 'Acceptance Sampling?
 - b) What are the different kinds of "Lot Acceptance sampling Plans' (LASP) practiced generally? 10
- 9. a) To derive the following two formulae for the binomial distribution: $\mu = np$, When n = no. of simple trails and p is the probability of success.
 - b) How is process capability expressed and measured? 6

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10. Calculate parameters and draw the control chart for number of rejects (*np*) during the inspection in drop-hammer department of sheet-metal part in a workshop as per the following inspection output.

Production order number	Lot size 'n'	Number of rejects ' <i>r</i> '
1	200	23
2	200	15
3	200	17
4	200	15
5	200	41
6	200	0
7	200	25
8	200	31
9	200	29
10	200	0
11	200	8
12	200	16

- 11. Write short notes on any *three* of the following :
- 3×5
- a) Fish-bone diagram/Ishikawa diagram
- b) SWOT analysis
- c) Producer's risk & Consumers' risk
- d) Operating Characteristic Curve
- e) LTPD & AQL.