	Utech
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Invigilator's Signature :	

# CS/B.TECH(CT)/SEM-7/HU(CT)-702/2011-12 2011 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 )

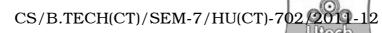
1. Choose the correct alternatives for the following:

 $10 \times 1 = 10$ 

- i) The temperature in a storage location is logged once every 30 minutes. The control chart that is appropriate for displaying these values is
  - a) x-bar and R
  - b) individual and moving range
  - c) p-chart
  - d) run chart.
- ii) 5-Why Analysis is for
  - a) continuous improvement
  - b) customer satisfaction
  - c) finding out root causes
  - d) all of these.

7112 [Turn over

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iii)	Kaiz	izen was introduced by						
	a)	Juran	b)	Ishikawa				
	c)	Crossby	d)	Deming.				
iv)	An e	experiment has four fac	tors	with two different levels				
	eacl	each. The experiment has eight runs. The design						
	calle	ed						
	a)	Full factorial design	b)	Half factorial design				
	c)	Interaction	d)	none of these.				
v)	Non	on-conforming products mean						
	a)	rejected products						
	b)	not meeting the specifications						
	c)	both of these						
	d)	none of these.						
vi)	Six	sigma was introduced at						
	a)	Toyota	b)	General Electric Co.				
	c)	Motorola	d)	Nissan.				
vii)	One	company manufactur	ing r	otten eggs continuously				
	can get ISO-9001 certification.							
	a)	No	b)	Ye				
	c)	Can't say	d)	Sometimes.				
viii)	Whe	When LSL less than X-bar - 3σ, then						
	a)	, , , , , , , , , , , , , , , , , , , ,						
	b)							
	c)	the process is balanced						
	d)	all of these.						
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- ix) One of the advantage of Kanban system is
  - a) In-process rejection is reduced
  - b) Consistency in output quality
  - c) Level of in-process inventory is reduced
  - d) Problem is identified easily.
- x) The name of the technical committee responsible for release & modification for ISO-9001 standard is
  - a) TC 186
- b) TC 180
- c) TC 176
- d) TC 178.

#### GROUP - B

## (Short Answer Type Questions)

Write short notes on any three of the following.

 $3 \times 5 = 15$ 

- 2. Total Quality Management.
- 3. Five 'S' and Five 'Why'
- 4. 7 QC tools
- 5. Cause and Effect diagram
- 6. Quality loop of an organization.

#### GROUP - C

### (Long Answer Type Questions)

Answer any three of the following.

 $3 \times 15 = 45$ 

- 7. Discuss different elements of Quality costs. Show graphically optimum cost of quality. Explain the steps to be followed when non-conforming products occur in the process. 7 + 4 + 4
- 8. What do you mean by process capability? When do you need to know capability of a process? Define 'Accuracy' & 'Precision'. 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 + 2 + 2 + 10

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- 9. In what way do ISI and ISO-9000 differ? Discuss different types of quality characteristics with their advantages & disadvantages. Make a Pareto diagram with the following defects occurred during processing of a Translucent Polycrystalline Alumina Ceramics:
  - i) Crack = 12%
  - ii) Spot = 8%
  - iii) Warpage = 4%
  - iv) Low transmittance = 3%
  - v) Bad handling = 1.5%
  - vi) Others = 2%.

3 + 6 + 6

- 10. 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 processes. Calculate  $C_{\text{p}}$  and  $C_{\text{pK}}$  indices for the processes :

Process	USL	LSL	Mean	Standard deviation	$C_{p}$	$C_{PK}$
A	2.64	1.98	2.25	0.10		
В	116.00	104.00	111.50	2.54		
С	520.00	505.00	511.00	2.50		
D	4.50	4.23	4.38	0.05		
E	12.60	12.00	12.30	0.125		
F	8.43	8.22	8.31	0.05		

Now, identify

- i) which process is most capable.
- ii) which is the least capable process.
- iii) which is the most accurate process.
- iv) which is the least accurate process.

6 + 9