(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2981/2794 Roll No.

B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION 2012-13

TOTAL QUALITY MANAGEMENT (TQM)

Time : 3 Hours   *Total Marks : 100*

Note : (1) *Attempt all questions.*

(2) *Allocated marks are indicated against every part of each question.*

1.   Attempt any **two** parts of the following :

(A) (i)   Detail out chronological evolution of quality control and change in concept in different era.   **(6)**

(ii) Explain how claims are being analyzed by the companies ?   **(4)**

(B) (i)   What do you mean by "Quality Planning" ? How does it address the vision and mission of an organization ?   **(6)**

(ii) What do you mean by review of design ? Explain it in relation to "Design for maintenance".   **(4)**

(C) (i)   Broadly classify methods and techniques used in manufacturing.   **(4)**

(ii) What are different processes of procurement ? Explain any one procurement process in detail.   **(6)**

2.   Attempt any **two** of the followings :

(A) (i)   What do you mean by house of quality ? Explain it with the help of figures and examples.   **(6)**

(ii) Discuss the advantages of empowered teams.   **(4)**

(B) "Batch type manufacturing system has less quality problem than Job shop or Mass production system". Comment on this statement whether it is right or wrong by comparing these three system on almost all issue of PPC and quality. **(10)**

(C) (i) Explain the role of "quality director". Also explain how such director coordinate among different levels through different management practice like training, auditing etc. **(6)**

(ii) How does the decision for quality can affect the society ? Explain with example. **(4)**

3. Attempt any **two** of the following :

(A) (i) Why do people rely on sampling in quality control ? Explain with proper reasoning. **(5)**

(ii) Explain central limit theorem. Enlist and explain probability distribution used for $\overline{X}$ and R chart, $\overline{p}$-chart and C-chart. **(5)**

(B) Control chart for $\overline{X}$ and R are to be established on a certain dimension part, measured in mm. Data were collected in subgroup of 6 and are given below. Determine trial limits. Assume assignable causes and revise the central line and limits. **(10)**

Subgroup No.	1	2	3	4	5	6	7	8	9	10
$\overline{X}$	20·35	20·40	20·36	20·65	20·20	20·40	20·43	20·37	20·48	20·42
$\overline{R}$	0·34	0·36	0·32	0·36	0·36	0·35	0·31	0·34	0·30	0·37
Subgroup No.	11	12	13	14	15	16	17	18	19	20
$\overline{X}$	20·39	20·38	20·40	20·41	20·45	20·34	20·36	20·42	20·50	20·31
$\overline{R}$	0·29	0·30	0·33	0·36	0·34	0·36	0·37	0·73	0·38	0·35
Subgroup No.	21	22	23	24	25					
$\overline{X}$	20·39	20·39	20·40	20·41	20·40					
R	0·38	0·33	0·32	0·34	0·30					

(C) A leading bank has compiled the data for 1000 accounting transaction/day during December and January. What control limits and central line are recommended for the control chart for February ? Assume any out-of-control points have assignable causes : **(10)**

Count of Nonconformities	Count of Nonconformities
8	17
19	14
14	9
18	7
11	15
16	22
8	19
15	38
21	12
8	13
23	5
10	2
9	16

4. Attempt any **two** of the following :

(A) What are the key concept that must be followed as a part of design activity that supports the reduction in repair time to increase maintainability ? **(10)**

(B) (a) The time-to-failure probability density function (PDF) for a system is **(2×4)**

$f(t) = 0 \cdot 01 \quad 0 \le t \le 100$ days.

Find :

(i) Realiability $R(t)$

        (ii)   The hazard rate function

        (iii) MTTF

        (iv) MTBF.

    (b) Define "Reliability" and factor affecting it.   **(2)**

  (C) What do you mean by ISO 9000 ? Describe four tiers of quality documentation. Also explain QS 9000 and TE 9000.   **(3+4+3)**

5.   Attempt any **four** of the following :   **(5×4=20)**

    (i)   Contrast between continuous improvement and innovation.

    (ii) What do you mean by FMES, MTTF, MTBF and hazard rate.

    (iii) Explain different categories of cost of quality.

    (iv) What do you mean by "Gain sharing" ?

    (v)   Explain concurrent engineering in relation to design review.

    (vi) List the methods to increase the reliability of a system. Explain, in brief, any one of them.