Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1720909 **Date: 14/07/2012**

Subject Name: Quality Control and Reliability

Time: 10:30 am – 13:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Discuss the following with respect to Quality Engineering. **07**
(i) Design / Redesign (ii) Conformance (iii) Performance

(b) Ten woolen carpets were studied critically for total number of defects in their texture. The details of the number of defects in each carpet are given below. **07**

Carpet No	1	2	3	4	5	6	7	8	9	10
Total Defects	2	4	2	5	3	1	5	3	2	3

All the ten carpets however, were regarded as acceptable by the quality control department of the company. Construct the suitable control chart and give your comments.

Q.2 **(a)** How does a manufacturing company exercise the control on the quality of the part if it is (i) purchased from outside (ii) manufactured within the company's own plant? **07**

(b) Discuss the benefits of ISO 9000 series. **07**

OR

(b) Discuss Taguchi Philosophy and draw the flow chart of Taguchi Method. **07**

Q.3 **(a)** Explain the 14 points of Deming's Management philosophy in brief. **07**

(b) What is the Quality Management according to Juran? **07**

OR

Q.3 **(a)** State the objectives of quality control. Explain briefly how these objectives are achieved in engineering industry. **07**

(b) How can sales and service call analysis help the industry in the manufacturing of the quality products? **07**

Q.4 **(a)** 'Quality can be improved through elimination of waste' - Give your comments **07**

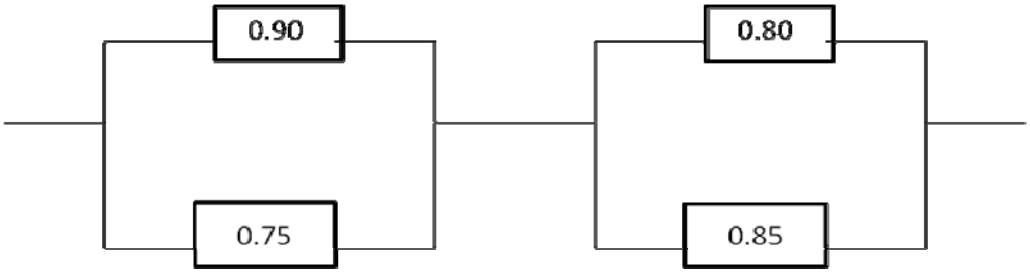
giving suitable example.

(b) Construct the cause and effect diagram for the following problems. **07**
(i) Rejection of the part produced on lathe.
(ii) Poor utilization of machine.

OR

Q.4 **(a)** Discuss the effect of the following on the reliability of the product. **07**
(i) Design Mistakes (ii) Manufacturing Defects (iii) Maintenance

(b) (i) Discuss the reliability of the system in series and in parallel. **07**
(ii) The system is shown in the figure. Each block represents the individual reliability. Calculate the reliability of the whole system.



Q.5 **(a)** Discuss the fundamental factors affecting the quality. **07**

(b) Discuss the approach to robust design. **07**

OR

Q.5 **(a)** Discuss the Pareto Diagram giving suitable example relating industrial problem. **07**

(b) Discuss the causes of product failure and the failure pattern with the help of the Bath Tub curve. **07**

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