Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1720909 **Date: 25-06-2014**

Subject Name: Quality Control and Reliability

Time: 10.30 am – 01.00 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) Explain system Reliability and probability. What is its importance in engineering field?

7 Marks

(B) How the system Reliability is calculated for

(1) simplest combination of units that form a system i.e. series combination

(2) parallel combination

(3) mixed combination

7 Marks

Q. 2 (A) In an hydraulic control system the connecting linkage has a reliability factor of 0.98 and the valve which has to operate within a certain time limit has a reliability factor of 0.92. The pressure sensor actuates the linkage has a reliability factor of 0.9. assume that all the three elements, namely, actuates the reliabilittors.tor, the linkage, and the hydraulic valve are connected in series with independent reliability factors. What is the reliability of control system? Comment on it.

7 Marks

(B) Consider a system of three identical units connected in parallel. Failures The unit Reliability factor is 0.90. If the unit failures are independent of one another and if the successful operation of the system depends on the satisfactory performance of any one unit, determine the reliability & comment on it.

7 Marks

OR

(B) What is fault tree analysis for failure analysis.

7 Marks

Q. 3. (A) (i) Explain the need of quality assurance system in industries.

(ii) Describe briefly the ISO-9000 series standards in general.

7 Marks

(B) State the outstanding features of ISO : 9000 series standards.

7 Marks

OR

Q. 3. (A) Describe the benefits of ISO-9000 series of standards.

(B) Describe the various steps necessary for obtaining ISO ï 9000 standard registration.

7 Marks

Q. 4. (A) Outline the theory underlying control chart for defects.

7 Marks

(B) How will you classify defects?

7 Marks

OR

Q. 4. (A) Write technical notes on

single sampling plan
double sampling plan

7 Marks

(B) State and explain the advantages and limitations of acceptance sampling over 100 % inspection.

7 Marks

Q. 5. (A) What are characteristics of a good acceptance plan?

(B) Give comparison between single, double and multiple sampling plans.

7 Marks

OR

Q. 5. (A) Explain Quality Concept

7 Marks

(B) (i) Define TQM

(ii) List the key elements of TQM

7 Marks

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