GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII EXAMINATION - WINTER 2015

Subject Code:182003 Date: 07/12 /2015

Subject Name: Quality Assurance and Reliability

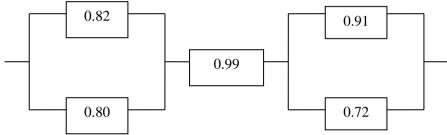
Time: 2:30pm to 5:00pm **Total Marks: 70**

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- (a) Explain the procedure for getting ISO9001 certification, along with the three essential 0.1 07 audits.
 - 1. Explain the role of the top management in quality management. 07
 - 2. 'Sampling is prone to risk.'- Evaluate.
- Explain the linearly increasing hazard model with suitable charts. **Q.2** (a)
- **07**

Calculate the reliability of the system. **(b)**

07



OR

What is baye's theorem? Explain the use of it with suitable example. **(b)**

07

Q.3 Following are the inspection results of a manufactured component for 12 observations. 07 Calculate the control limits, draw a suitable control chart and state whether the process is under statistical control or not.

Observation No.	No. of items	No. of defectives
	inspected	
1	25	3
2	30	3
3	31	4
4	46	4
5	32	2
6	35	1
7	45	6
8	32	2
9	31	1
10	43	4
11	43	3
12	39	2

What is pareto principle? Construct pareto diagram for a company supplying 07 reduction gear boxes, which received different types of complaints as under:

Type of complaint	No. of times complaint received
Noisy gearbox	18
Oil seal leakage	77
Oil level glass broken	16
Gear box casing broken	5
Shaft key slot not there	3
Lifting lug missing	67
Instruction manual not supplied	14
Wrong supply	8
Improper speed reduction	10

Also give your suggestions to management based on the pareto diagram.

- 0.3 Explain following clauses of ISO9001. 07 (a) 1. Product identification & Traceability 2. Control of customer supplied products Draw a fishbone diagram for reduced production rate in a manufacturing firm. 07 (b) Q.4 Explain 14 points of Deming for TQM implementation 07 (a) Explain the following: 07 (b) 'Quality control is better than Quality assurance.' - Evaluate. i. ii. Quality chain in the context of TQM. Q.4 (a) Explain the complementary events and mutually exclusive events with suitable 07 examples. (b) Taper Roller bearings of the same size are made in lots of 500 each. Following are the 07 results of number of defects in first 9 lots. Draw an appropriate chart and comment on the stability of the process. Also compute control limits for the future production. Lot No. 5 8
- What do you mean by redundancy? Explain various types of redundancies with graph. 07 Q.5 Show the best redundancy with suitable example.

4

44

Three V-belts are used for driving a machine tool. However for satisfactory working of machine at least two belts should work satisfactorily. If the probability of failure of each of the three belts is 0.08, find the probability of satisfactory performance of the machine.

34

OR

Q.5 Explain in Brief with examples: 1. MTTF 2. Failure Density 3. Failure Rate 4. Reliability

1

42

of

No.

defects

2

61

3

72

Derive the expression for Probability of (E or F). Explain the case with suitable 06 example.

6

22

7

31

18

25

07

08