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

PAPER ID :   **Roll No.** | | | | | | | | | | |
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B.TECH.

Theory Examination (Semester-VIII) 2015-16

QUALITY CONTROL

Time : 3 Hours   *Max. Marks : 100*

Note: Attempt any five questions

1. Attempt the following:

a)   Explain various methods of Non- Destructive Testing and Evaluation.

b)   Discuss quality planning for manufacture and list important activities of planning for manufacture and important considerations involved in it.

2. Attempt the following:

a)   Describe the Principle of Acceptance Sampling with the help of a case study.

b)   Explain various activities involving costs of quality. Also explain the economics of quality of conformance.

3. Attempt the following:

a)   Give a detailed discussion about the construction and analysis of X charts.

b)   For a subgroup size of 5, following data were obtained over 10 days to initiate R chart:

Sample No.	Range	Sample No.	Range	Sample No.	Range	Sample No.	Range
1	23	6	8	11	9	16	6
2	8	7	15	12	8	17	10
3	22	8	6	13	7	18	9
4	12	9	7	14	4	19	7
5	7	10	12	15	6	20	10

Given for sample size 5, the constants D3=0, D4=2.11.Determine control limits.

4. Attempt the following:

a)   Calculate the probability of survival of equipment that will work for 500 hours and which consists of 4 Subassembly systems having following MTBF:

Subassembly system	A	B	C	D
MTBF (Hours)	5000	3000	15000	15000

b)   The mean life of a certain ball bearing can be modelled using a Normal distribution with a mean of six years and a standard deviation of one year. Determine each of the following:

i. The probability that a ball bearing will fail before seven years of service.

ii. The probability that a ball bearing will fail after seven years of service (i.e., find its reliability).

5. Attempt the following:

a)   What is difference between ISO9001:1994, ISO9002:1994 and ISO9003:1994.Also discuss major changes that have been incorporated in ISO9000:2000.

b)   Explain all the three fundamental concepts on which Taguchi's Design is based.

6. Attempt the following:

a)   Explain the procedures of evaluation of suppliers and capacity verification.

b)   The state & local police departments are trying to analyze crime rates so that they can shift their patrols from decreasing rate areas to areas where rates are increasing. The police have collected data about the crime incidences for past 12 months by taking a random sample of 1000 of the 5000 residences in one area. The data are:

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Crime incidence	71	91	71	71	71	91	78	109	80	129	101	91

Draw an appropriate chart and plot each of the months. If next three months show crime incidences in this area as Jan 110, Feb 212, March 110, what comments you make regarding the crime rate?

7. Attempt any two of the following:

a)   Explain the Elements of Value Analysis.

b)   Explain Quality Circle and its objectives and functioning.

c)   Explain the components of JIT and its benefits and limitations.

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