Printed Pages:02 **Sub Code: KOE -085**

Paper Id: 236095 **Roll No.** | | | | | | | | | | |

B.TECH
(SEM VIII) THEORY EXAMINATION 2022-23
QUALITY MANAGEMENT

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) Differentiate between Quality of Conformance and Quality of Performance.
(b) Differentiate between the reliability and maintainability of the product.
(c) Explain Quality Function Deployment.
(d) What are the basic causes of the apparatus error?
(e) Define capability index.
(f) What are the limitations of a basic *C-Chart?*
(g) If 5 elements are in series and each element has a reliability of 0.55 then calculate the reliability of the combined unit.
(h) Define MTTR.
(i) Why tolerance in design is necessary?
(j) What are the limitations of JIT?

SECTION B

2. Attempt any *three* of the following: 10x3=30

(a) Explain the process of evolution of the *prototype*.
(b) Explain the economics of quality of conformance.
(c) Explain Pareto Diagram and how it is constructed.
(d) Explain the process of identification and analysis of defects in the product line.
(e) Explain the concept of JIT.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

(a) Enumerate the various methods of procurement of products.
(b) Differentiate between the term warranty and guarantee. How the claims are being analyzed?

4. Attempt any *one* part of the following: 10x1=10

(a) Elaborate house of quality using a schematic diagram.
(b) Enumerate the various steps to be taken in the planning of cost reduction programs.

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5. Attempt any *one* part of the following: 10x1=10

(a) The following data are found during the inspection of the first 15samples of size 100 each from a lot of two-wheelers manufactured by an automobile company

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of Defectives	3	4	6	2	12	5	3	6	3	5	4	15	5	2	3

Draw the chart for fraction defective (p) and comment on the state of control. If the process is out-of-control, calculate the revised center line and control limits by assuming assignable causes for any out-of-control point.

(b) Explain the central limit theorem. Enlist and explain the probability distribution used for $\bar{X}$, *R-chart* and *C-Chart.*

6. Attempt any *one* part of the following: 10x1=10

(a) The probability distribution function for time to failure in years for the drive train on the Regional Transit Authority bus is given by

$f(t)= 0.2-0.02t \qquad 0 \leq t \leq 10$ *year*

Find:

i. Reliability *R(t)*
ii. The Hazard Rate Function
iii. MTTF
iv. MTBF
v. Compute standard deviation

(b) The It will Failure Company manufactures gizmos for use in widgets. The time to failure of these gizmos in years has the following PDF:

$f(t) = \frac{200}{(t+10)^3}$ for $t \geq 0$

i. Derive the reliability function and determine the reliability for the first year of operation.
ii. Compute MTTF
iii. What is the design life for a reliability of 0.95?

7. Attempt any *one* part of the following: 10x1=10

(a) What do you understand by documentation of quality systems in ISO 9000?

(b) Explain the Taguchi Method in quality engineering?

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BTECH
(SEM VIII) THEORY EXAMINATION 2023-24
QUALITY MANAGEMENT

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	Marks	CO
a.	Define Quality and Quality management.	02	1
b.	Explain claim analysis.	02	1
c.	Describe quality function.	02	2
d.	Outline Appraisal cost.	02	2
e.	Describe control chart's upper control limit (UCL) and lower control limit (LCL).	02	3
f.	Explain the role of control charts in quality analysis applications.	02	3
g.	Describe reliability with example.	02	4
h.	Describe Defect identification and resolution.	02	4
i.	Contrast need of Quality management system.	02	5
j.	Define Quality Audit.	02	5

SECTION B

2. Attempt any *three* of the following: **3 x 10 = 30**

a.	Describe the Quality concept in design. Explain the process of the "review of design".	10	1
b.	Explain Quality function and the process of deployment of quality function in an organization.	10	2
c.	Explain the construction of R charts. Discuss with some example.	10	3
d.	Explain "zero-defect". Explain the role of zero defect policy in achieving the highest standards of quality.	10	4
e.	Describe Quality Audit and its types in detail.	10	5

SECTION C

3. Attempt any *one* part of the following: **1 x 10 = 10**

a.	Discuss the TQM Modern concept. Explain the dimensions of the quality.	10	1
b.	Discuss the following terms Quality in sales and services 2) Guarantee 3) Analysis of claims	10	1

4. Attempt any *one* part of the following: **1 x 10 = 10**

a.	Contrast the statement "Quality is free". If some organization is investing capital to achieve quality standards then how quality is free in long run.	10	2
b.	Contrast the role of human Factor in quality Attitude of top management. Also explain how the leadership attitude of top management affects quality.	10	2

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BTECH
(SEM VIII) THEORY EXAMINATION 2023-24
QUALITY MANAGEMENT

TIME: 3 HRS **M.MARKS: 100**

5. Attempt any *one* part of the following: 1 x 10 = 10

a.	How does the acceptance sampling by variables differ from that by attributes? Explain.	10	3
b.	Explain the construction of P charts. Discuss with some example.	10	3

6. Attempt any *one* part of the following: 1 x 10 = 10

a.	Illustrate MTTF (Mean Time To failure), MTTR (Mean time to repair) and MTBF (Mean Time between failures). Let the failure rate of a railway engine is 0.0002 failure/hr. Find MTTF of the railway engine.	10	4
b.	Illustrate the defect management process. Explain the various steps involved the defect management process.	10	4

7. Attempt any *one* part of the following: 1 x 10 = 10

a.	Describe ISO 9000 family. Describe the ISO8402, 9000, 9001, 9002, 9003 and 9004 in detail.	10	5
b.	Describe JIT approach to minimize the waste in manufacturing. Explain the need of JIT.	10	5

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BTECH
(SEM VIII) THEORY EXAMINATION 2021-22
QUALITY MANAGEMENT

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Define Quality.
b.	What do you mean by procurement? Explain.
c.	What is prototype?
d.	Define SWOT analysis.
e.	What is R-chart?
f.	Define Quality hierarchy.
g.	What is Zero defect? Explain.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	What do you mean by evolution of quality control? Discuss with suitable example.
b.	What is Quality Management? Discuss its various functions in detail.
c.	Discuss various human factors in quality attitude of top management.
d.	What are control charts? Discuss.
e.	What are the obstacles in implementing TQM? How it can be overcome?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Discuss in brief the methods to ensure the manufacturing quality.
(b)	Describe the process of evaluation of supplies with example.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Write a note on the organization structure and design of quality management.
(b)	Explain the following with example: (i). quality value and contribution, (ii). Quality cost and its optimization.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	What do you mean by process capability study? Discuss with some example.
(b)	Explain the construction of Xbar and R control charts. Where are they used?

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(SEM VIII) THEORY EXAMINATION 2021-22
QUALITY MANAGEMENT

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) In the manufacture of armatures for electric motors, inspection results of 20 samples of each having 100 units of armature is given in the following table calculate the average fraction defective and the control limits construct, the p chart and comment on the process.

Lot No.	No. of Defective	Lot No.	No. of Defective
1	5	11	4
2	10	12	8
3	11	13	4
4	16	14	2
5	8	15	5
6	7	16	5
7	6	17	3
8	6	18	9
9	7	19	7
10	5	20	12

(b) In a factory producing spark plug the number of defective found in inspection of 20 lots of 100 each, is given below:

Lot No.	No. of Defective	Lot No.	No. of Defective
1	5	11	4
2	10	12	7
3	12	13	8
4	11	14	3
5	5	15	3
6	6	16	4
7	4	17	5
8	7	18	8
9	6	19	6
10	3	20	10

i. Construct a suitable control chart and state if the process is in control.
ii. Determine the sample size where a quality limit is not worse than 10% is desirable and a 11% bad producer will not be permitted more than three times per thousand.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Write short note on the following: (i) MTTF, (ii). Maintainability, (iii) Quality circle.

(b) What is ISO-9000 and its concept to quality management?

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