Printed Pages—3   TEC033

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

PAPER ID : 0389   Roll No. [| | | | | | | | | | |]

B. Tech.

(SEM. VIII) THEORY EXAMINATION 2010-11

RELIABILITY AND QUALITY MANAGEMENT

Time : 3 Hours   *Total Marks : 100*

Note : (1) Attempt all questions.

(2) Marks allotted to each question are indicated on right hand side.

1. Attempt any **four** parts of the following :   (4×5=20)

   (a) Define Quality. Explain the difference between quality and total quality control.

   (b) Explain the difference between Early failure and Wear out failures giving suitable examples.

   (c) Explain how Availability, Complexity of devices, maintainability, maintenance system practiced and failure history are responsible for system effectiveness ?

   (d) Explain the Bath Tub Curve.

   (e) How are Quality and Reliability related ? Up to what extent cost incurred on quality improvement is justified in reference to Reliability ?

   (f) Explain Preventive maintenance. Up to what extent expenses incurred on preventive maintenance are justified.

2. Attempt any **two** parts of the following : (2×10=20)

   (a) What do you understand by Probability Distribution ? Explain Poisson Distribution. Under what condition this distribution is applicable ?

   (b) Explain the importance of Weibull Distribution. Where it can be applied ? Give suitable examples.

   (c) An Electronic assembly consists of two subsystems, A and B. Each assembly is given one checkout test. Records on 100 preliminary checkout tests show that subsystem A failed 10 times. Subsystem B alone failed 15 times. Both systems A and B failed together five times. Find, what is the probability of A failing, given that B has failed.

3. Attempt any **two** parts of the following : (2×10=20)

   (a) Explain various methods of Data collection and storage. How component reliability can be established using such data.

   (b) Explain the Fault Free technique for prediction of system reliability giving its applications.

   (c) Discuss various models for improving System Reliability improvement in detail.

4. Attempt any **two** parts of the following : (2×10=20)

   (a) Briefly describe two failure modes that can occur in modern Integrated circuits. How are Temperature, Electrial stresses and manufacturing quality responsible for these failures ?

(b) Explain the effect of the following on proper functioning of Electronic components :

    (i)   Distortion and Jitter.

    (ii) Electromagnetic Interfaces.

(c) Discuss the reliability of electronic components as an overall contributor to system reliability specially from the designers point of view.

5. Attempt any **two** parts of the following :   **(2×10=20)**

(a) What do you understand by total quality management ? Discuss its key elements in detail.

(b) What is ISO ? What are the advantages of ISO certification ? Discuss in detail.

(c) Write notes on any two :

    (i)   Quality Circles

    (ii) SWOT Analysis

    (iii) Quality Audit

    (iv) Cost of Quality.