

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

**PAPER ID : 2900**

Roll No.

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**B.Tech.**

(SEM. VIII) THEORY EXAMINATION 2011-12

**RELIABILITY ENGINEERING**

*Time : 3 Hours*

*Total Marks : 100*

**Note :—** (1) Attempt **all** questions.

(2) Each question carries equal marks.

1. Answer any **two** parts of the following :— **(10×2=20)**
  - (a) What do you mean by “Reliability” ? Also discuss the various types of failures in the field of reliability engineering.
  - (b) Discuss the various factors influencing system effectiveness in reliability engineering.
  - (c) Explain the various parameters of system effectiveness in reliability engineering.
2. Answer any **two** parts of the following :— **(10×2=20)**
  - (a) What do you mean by “PROBABILITY” of system reliability ? Also discuss the laws of probability.
  - (b) Explain the Bay’s theorem for reliability concepts. Also mention its significances and drawbacks.

(c) Write short notes on the following :—

- (i) Empirical Reliability Calculations.
- (ii) Data Analysis Procedures
- (iii) Data Collection and Recovery of Data.

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

(a) Discuss the various types of reliability systems :—

- (i) Series
- (ii) Parallel
- (iii) Series parallel

Also mention its importances.

(b) Explain the following methods of reliability evaluations :—

- (i) CUT-SET Methods
- (ii) TIE-SET Methods
- (iii) MARKOV Methods.

(c) Discuss the reliability evaluation using probability distribution methods. Also mention the limitations of probability distribution methods.

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

(a) What are the methods of reliability improvement ?

Explain in detail.

- (b) Explain the following :—
- (i) Component Redundancy
  - (ii) System Redundancy.
- (c) Explain the types of redundancies. Also discuss the effect of maintenance.
5. Answer any **two** parts of the following :— **(10×2=20)**
- (a) What do you mean by “RELIABILITY TESTING” ? Also mention its advantages and disadvantages.
  - (b) What are the requirements for reliability testing ? Also discuss the testing planning.
  - (c) What are the reliability test standards ? Also mention its importances.