

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

Paper ID : 121857

Roll No.

B.TECH.

Theory Examination (Semester-VIII) 2015-16

RELIABILITY ENGINEERING

Time : 3 Hours

Max. Marks : 100

Section-A

Q.1. Attempt all parts of the following: (10×2=20)

- (a) Differentiate between MTTR and MTTF.
- (b) Define reliability.
- (c) Define Conditional Reliability.
- (d) What is fault free technique?
- (e) Explain destructive testing.
- (f) Explain Life testing.
- (g) What is surveillance testing?

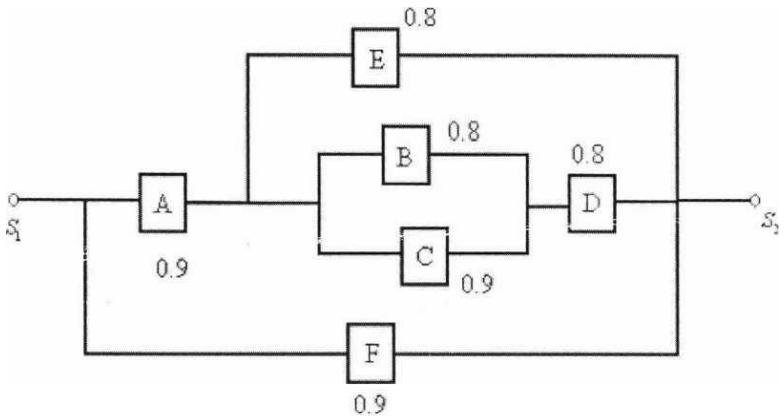
- (h) Define Weibull distribution.
- (i) Describe unit redundancy
- (j) There are 20 glow bulbs in a lead which are connected in series. The average reliability is 0.96. Find the reliability of the lead.

Section-B

Q.2. Attempt any 5 questions from this section. (5×10=50)

- (a) What is a bathtub curve? Describe in detail.
- (b) Explain various types of redundancies.
- (c) What are random variables? Explain continuous and discrete random variables.
- (d) A man speak truth 3 out of 4 times through a die and says that it is a six. What is the probability that it is actually a six ?
- (e) Classify the types of failures. Explain each type with examples.
- (f) Explain various law of random events and also draw the complementary, disjoint, union and intersection of events using Venn diagram.

- (g) Compare and contrast the following :
- (i) Reliability and availability
 - (ii) Reliability and maintainability
- (h) Calculate the reliability of the given system using network reduction method.



Section-C

Note: Attempt any 2 questions from this section.

Q3. Describe the method of reliability improvement.

Q4. Describe Reliability of systems:

- (a) Components in series

- (b) Components in parallel
- (c) Components in series-parallel

Q5. Write short notes on:

- (a) Markov Chains
- (b) Frequency and duration concept
- (c) Decomposition method for composite systems
- (d) Reliability indices evaluation for Radial Networks in distribution systems