

Indian Statistical Institute, Bangalore

M.S. (QMS) First Year

Second Semester – Reliability, Maintainability and Safety II

Mid Term Exam

Duration: 2 Hrs

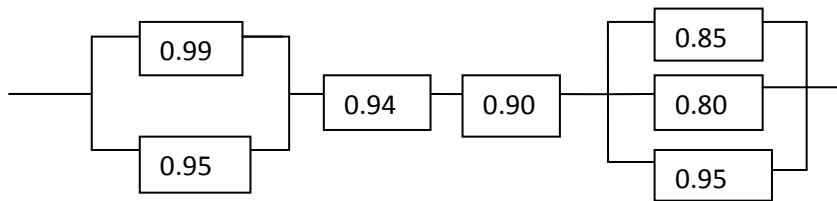
Date: February 23, 2016

Max Marks: 50

1. (a) Define series and parallel systems.

(b) If three components with exponential failure rates  $\lambda_1, \lambda_2, \lambda_3$ , are connected in series, calculate the system reliability and MTBF. [10]

2. Calculate the reliability of the following system configuration where each component has the indicated reliability. [15]



3. Explain different types censoring schemes with examples. [15]

4. Ten items were put on life test to failure. The corresponding data (in hours) are as follows: [10]

871, 2294, 3943, 5494, 7900, 8073, 11020, 15840, 17520, 18425

Assuming Exp ( $\lambda$ ), calculate

(a)  $\lambda$

(b) 99 % confidence interval for  $\lambda$ .

(c) MTTF

5. Write short note on the following: [10]

(a) FMEA

(b) FTA