Certified Reliability Engineer (CRE)

1. In a FMECA, the potential failure modes are determined in order to improve system reliability. The effort to assess the severity of failure effects is part of the:

A. Criticality analysis.

B. Modeling determination.

C. Risk analysis.

D. Design potential.

Answer(s): A

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2. In order to sustain a high system reliability in the field, it is BEST to:

A. Write detailed reports on major failure modes.

B. Fully analyze all failed components

C. Lubricate the equipment exactly to manufacturing specifications.

D. Follow a preventive maintenance program with scheduled diagnostic checks.

Answer(s): D

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3. Which process has as its principle parts

A. Defining the program plan.

B. Demonstrating the reliability.

C. Design review.

D. Predicting reliability.

Answer(s): D

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4. The distribution used to describe the time between failures which occur independently and at a constant rate, is the:

A. Exponential.

B. Weibull.

C. Gamma.

D. Log normal.

Answer(s): A

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5. Which of the following is the main advantage of a step stress test?

A. It guarantees accurate estimates

B. It segregate discrepant hardware

C. It runs at constant stress

D. It yields failure quickly

Answer(s): D

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6. A "fail-safe" requirement means:

A. The system is safe from failure.

B. The safety systems cannot fail.

C. The system has safety devices.

D. The system will fall in a safe state.

Answer(s): D

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7. Nonrelevant failures include all of the following EXCEPT:

A. Human error failures.

B. Unverified failures.

C. Operating adjustment failures.

D. Mishandling failures

Answer(s): B

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8. The influence of FMEA on reliability is maximized at which of the following stages of development?

A. Test.

B. Design.

C. Prototype.

D. Operation.

Answer(s): B

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9. When reliability people say they are breaking the monopoly of the designer they mean
Response:

A. They intend to review the design in conjunction with other experts.

B. They insist on having final approved of the design.

C. They are relieving the designer of his/her responsibility for the design.

D. They intend to put the reliability engineer organizationally higher than the design engineer.

Answer(s): A

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10. Using complete field-based data, a reliability engineer has analyzed the reliability growth of a repairable system over the last 24 months. The analysis suggests a "no growth" condition, and that finding is reported to management.

A. Arrange a meeting with the customer and discuss all past occurrences

B. Ask the department manager to respond to the customer's request.

C. Revisit the original data and project artificial reliability growth to satisfy the customer's request.

D. Arrange a meeting with the department manager and upper management to discuss the reliability report.

Answer(s): D

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11. A software sneak circuit is BEST described as which of the following?

A. An error-handling routine

B. An infinite loop

C. Dead code

D. An invalid, executable path

Answer(s): D

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12. The success of the FMEA is principally dependent on:

A. III only

B. II and III only

C. I only

D. II only

Answer(s): C

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13. Which mathematical model is characterized by linking exact relationships between variables?

A. Predictive link.

B. Stochastic process.

C. Random process.

D. Deterministic process.

Answer(s): D

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14. A reliability test conducted during the pre-production stage is called

A. Failure analysis.

B. Qualification test.

C. Significance test.

D. Acceptance test.

Answer(s): B

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15. Software reliability planning includes all of the following EXCEPT

A. Trade-offs of general purpose programs vs. commercially available programs.

B. Selecting models for data analysis and prediction.

C. Modeling acquisition of computer software systems.

D. Trade-offs involving cost, schedule, and failure intensity of software products

Answer(s): A

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16. A device has a MTBF of 400 hours. Assuming an exponential distribution of time to failure, what is the maximum time of allowable operation if a reliability of .995 is required?

A. 0.2 hours

B. 2 hours

C. 20 hours

D. 0.02 hours

Answer(s): B

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17. Data collection for a failure reporting, analysis, and corrective action system is important. The control of input data is BEST determined by:

A. The use of a form.

B. Training of data collectors.

C. A failure review board.

D. Possible cause identification

Answer(s): B

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18. Which of the following will provide the BEST information for determining the value of reliability activities?

A. Corrective action closure reports.

B. Daily SPC report.

C. Weibull analysis report

D. Return on investment.

Answer(s): D

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19. A fault tree analysis (FTA) is a design analysis technique constructed from a "top event". A basic problem with this technique in comparison to a FMECA would be which of the following?

A. Needing a different FTA for each defined top event.

B. Assigning probabilities to the various events.

C. Understanding logical symbols.

D. Only electronic systems can be analyzed.

Answer(s): A

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20. Which of the following should be avoided in parts selection to enhance the design reliability?

A. Selection of exotic technology parts.

B. Selection of redundant parts.

C. Selection of standard parts.

D. Selection of high reliability parts.

Answer(s): A
