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28/5/13 FN

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Question Paper Code : 65055

(5 Year) M.Sc. DEGREE EXAMINATION, MAY/JUNE 2013.

Elective

Software Engineering

XIT 011 — SOFTWARE RELIABILITY

(Common to 5 Year M.Sc. – Information Technology)

(Regulation 2003)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How is the failures and faults identified in a system?
2. What significant factor of software maintenance improves the reliability?
3. Define fault tolerance.
4. State the merits used in determining the software reliability of various phases of a software project.
5. Differentiate between the Exponential and Logarithmic models.
6. How is failure correlation related to reliability modeling?
7. State the major issues in the recalibration of the models.
8. On what basis the jelinski-moranda model functions?
9. Give an example for logical testing and functional testing.
10. Define reusability.

PART B — (5 × 16 = 80 marks)

11. (a) State the significance of software requirement specifications (SRS). For a ticket issuing system in railways. How does SRS prepared help in the analysis of software reliability? Prepare an SRS for the same and relate. (16)

Or

- (b) (i) What are the factors associated with the dependable systems? Explain. (8)
- (ii) Compare and contrast with examples :
- (1) Errors, fault and failures (4)
- (2) Availability and reliability. (4)
12. (a) Discuss the merits and demerits of structured analysis and structured design. Explain the same with a suitable application. (16)

Or

- (b) (i) How does the software reliability factor improved by monitoring the development process? (10)
- (ii) Discuss on the estimation of the software cost and planning of the schedule. (6)
13. (a) (i) State the different key process areas in each level of the process maturity levels. Sketch the hierarchy of the quality with effectiveness of an organizations capability. (10)
- (ii) Elaborate on the various measuring software reliability factors and metrics. (6)

Or

- (b) Describe in detail the various statistical approach and the related software reliability metrics that are used. (16)
14. (a) (i) List the techniques and tools that help in the analysis of model accuracy. Explain these models with illustration. (10)
- (ii) Explain the major issues and factors of the reliability growth models. (6)

Or

- (b) (i) Explain the complete prediction system with necessary illustration and sketches. (10)
- (ii) Discuss the various software cost models. (6)

15. (a) Explain all of the testing strategies and the ways to maintain the reliable software. (16)

Or.

- (b) Consider a software application to maintain the records of the patients in a medical hospital and to access the progress of the patient in the continuous treatment. State the kind of testing required before releasing the product and also explain the failure mode effects and critical analysis performed over the case study. (16)
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