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M.C.A. DEGREE EXAMINATION, AUGUST/SEPTEMBER 2008.

Third Semester

DMC 1703 — SOFTWARE ENGINEERING

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List any two roadblocks for the applicability of Formal Methods in software development.

2. "The time-error curve for software industry gives ripple effect in reality". Justify the statement.

3. Mention any two problems that a manager might face while estimating the effort required for a project.

4. Distinguish between Verification and Validation. Who should be doing these activities?

5. List any two reasons why a review process would fail to meet its objectives.

6. Define Abstraction, Refinement and Modularity. (Any one of these three concepts).

7. What is Pareto principle and how it is used in software testing?

8. List the merits and demerits of Top-down testing.

9. What are the main responsibilities of Software Quality Assurance group?

10. What are the problems encountered with uncontrolled change management?

PART B — (5 × 16 = 80 marks)

11. (a) Compare the following process models with respect to their characteristics: (4 + 4 + 4 + 4)

(i) Linear sequential Model

(ii) Prototype Model

(iii) Rapid Application Development

(iv) Incremental Model.

Or

(b) (i) Explain why waterfall model of the software process is not an accurate reflection of the software development activities. (4)

(ii) Give reasons and suggest the appropriate process model for the development of the following systems

(1) An interactive system, which allows railway passengers to find train timings from terminals installed in stations.

(2) A university accounting system which is being built to replace an existing system

(3) A state-of-the-art word processing system (12)

12. (a) We discussed the example of "Weekly Activity Report" system which is to be used by the Employees of a software development firm for recording the time spent on various activities done during the course of any given week.. You are given the responsibility of analyzing the system for estimation purpose. Prepare a Context diagram and Functional decomposition diagrams to help your task.. Define boundaries for the system and list your assumptions. Explain how these diagrams will help you in estimating the effort required. (16)

Or

(b) Amateur Artist's Magazine (AAM) is an established monthly publication. AAM is mailed to subscribers and also sold at book stores and stalls. A number of copies are mailed free of cost to an influential group of people. Here is the breakdown of AAM's circulation list:

39,000 copies mailed directly to subscribers.

5,000 copies sold through stores

2,000 copies distributed free.

Draw a context diagram and data flow diagrams for the subscription processing system. Clearly list your assumptions. (16)

13. (a) (i) Why data dictionary is needed during analysis modeling? (4)

(ii) You have been asked to build a simple invoicing system for small business. Develop an Entity-Relationship diagram that describes the data objects, relationships and attributes. (12)

Or

(b) (i) What is control hierarchy and mention its characteristics? (4)

(ii) Explain the role of "Functional Independence", "Coupling" and "Cohesion" in Modular design. (12)

14. (a) (i) Give the pictorial view of various testing strategies that occurs during the various phases of Software Development Life Cycle. (4)

(ii) Explain with an example on your own how White Box and Black Box testing are being carried out. (12)

Or

(b) (i) List the elements of a good test plan. (4)

(ii) Assume that you are responsible for testing the Graphical User Interface of a software product. What guidelines would you recommend in developing a series of test cases for Windows, Pull-down menus, Mouse operations and Data entry boxes? (12)

15. (a) (i) What are baselines? When should it be created during the life cycle of a project? (4)

(ii) Assume that you are the manager of medium sized software organization in which there is no well-defined configuration management procedure. What would be the Risk Management strategy you would employ to tackle this situation? (6)

(iii) Write a note on Software Configuration Audit. (6)

Or

(b) Write a note on the following topics: (4 + 4 + 4 + 4)

(i) Software Review vs. Technical Reviews

(ii) Quality standards

(iii) Reliability

(iv) Software Quality Assurance plan
