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Question Paper Code : 96354

M.C.A. DEGREE EXAMINATION, FEBRUARY/MARCH 2014.

First Semester

DMC 7104 — SOFTWARE ENGINEERING

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the difference between a software life cycle and a process model.

2. For each of the following document indicate in which phase of the software life cycle it is produced: final user manual, architecture design, SQA plan, module specification, source code, statement of work, test plan, preliminary user manual, detailed design, cost estimate, project plan, test report, documentation.

3. What is the objective of FAST? Expand.

4. State the requirement gathering for any software package.

5. Why it is necessary to design the system architecture before the specifications are completed?

6. What are the issues in distributed system design?

7. What are test cases? What kinds of test cases are required for unit testing?

8. Explain in one or two sentences why quality metrics by themselves are inadequate for predicting the quality of a software design. State the advantages of function point metrics over the LOC metrics.

9. State the use of CASE tools.

10. Discuss the cost factors involved in major and minor enhancement and maintenance.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the major features of fourth generation techniques. (8)

(ii) Explain in detail the Agile methods and its significance. (8)

Or

(b) Give an evolving software process model to develop a automated grocery store software with details involving customer, suppliers, purchase, items, item – cost, number of items sold, etc. Compare and justify with any other two models. (16)

12. (a) Distinguish between functional and non functional requirements. Consider the following application: You are asked to design a new product – a speed and distance computer to be mounted on the handlebars of a bicycle. The hardware includes two control pushbuttons, an LCD screen and a rotation sensor on the bicycle wheel. The device will have three normal operating modes: display of the current speed and distance traveled today; a graph of distance traveled on each day of the week; and a graph of average speed plotted against day of the week. It will be powered by stored energy from the rotation sensor. As stored energy becomes depleted, power management functions should first save data to non-volatile memory, then turn off the screen, and as a last resort shut down clock functions. Discuss the functional and non functional requirements with SRS in detail for the above application. (16)

Or

(b) Requirements should state what a system should do, without stating how it should do it. Why is this distinction useful? Give the importance of Requirements Engineering in software engineering process? Explain all phases of requirement engineering. (16)

13. (a) Consider the application of developing a personal computerised diary so that you can maintain a diary of appointments at half-hourly intervals during normal working hours. Appointments should be either flexible (able to be moved) or fixed. Ideally, you would like your colleagues to be able to read your electronic diary from different machines but not to update it. Draw a block diagram of a possible architecture for such a system. You should identify the principal subsystems and the links between them. Use a DFD to represent the process. (16)

Or

(b) (i) Explain the various design concepts and notations and their effectiveness in coding. (10)

(ii) Describe the concepts of cohesion and coupling. (6)

14. (a) How do you distinguish black box testing and white box testing? State the significance of both and elaborate on various approaches to white box testing. (16)

Or

(b) (i) Discuss in detail the different issues in coding and good programming practice. (8)

(ii) What factors improve the standard during code inspection and reviews? Discuss. (8)

15. (a) What type of Software Cost Estimation technique is followed in the COCOMO model? Explain in detail all the attributes involved in the Construction Model. Explain project duration and staffing for the same. Illustrate using the home security system application. (16)

Or

(b) (i) Write short notes on Change management. (6)

(ii) Elaborate on Software Configuration Management. (10)
