S–51251

Register No. | | | | | | | | |

BE Degree Examination April 2016

Fourth Semester

Computer Science and Engineering

14CST44 – SOFTWARE ENGINEERING

(Regulations 2014)

Common to BTech Information Technology

Time: Three hours Maximum: 100 marks

Answer all Questions

Part – A (10 × 2 = 20 marks)

1. Define software engineering.
2. State any two advantages of water fall model.
3. Mention the role of QFD in requirements engineering. What types of requirements does it cover?
4. What is an actor with reference to use case diagrams?
5. Classify the major architectural styles for computer based systems.
6. Identify any four basic design principles applicable to component level design.
7. In what way, does validation differ from verification?
8. Distinguish between alpha testing and beta testing.
9. A software team delivers a software increment to end users. The users uncover eight defects during the first month of use prior to the delivery software team found 216 errors during testing and formal technical reviews. Find the overall Defect Removal Efficiency (DRE) for the project after one month's usage?
10. State the use of calculating earned value analysis.

Part – B (5 × 13 = 65 marks)

11. a. Define agility in context of software engineering. Enumerate any five agile principles. Also give a brief note on extreme programming as the most widely used approach for software development. (13)

(OR)

b. i) Suppose the manager of a working women's hostel wants to use a full fledged software to maintain all the activities like online registration for accommodation, inventory management module for the furniture in the hostel, payroll management module of all the employees, visitor's details etc. The manger approaches a software organization which has highly skilled and experienced developers in the required domain. The manager decided to place the order to that organization, but says that he wants online registration module to be shipped out at the earliest possible rather than giving emphasis documentation and other functionalities. Also, he insists that remaining functionalities may be delivered in turn. Recommend an appropriate process model for developing the software. Give a detailed explanation to support your answer. (9)

ii) Summarize the need for incremental model for software development. (4)

12. a. i) Draw use case, activity and class diagrams for the following scenario: (9)

A customer uses a Bank ATM to check the balances of his / her own bank account, deposit amount, withdraw amount and transfers funds to other account.

ii) List the types of models that requirement analysis modeling produces. Write a short description about the models. (4)

(OR)

b. Why is requirement engineering essential in software development? Enumerate and present a brief overview of the tasks to be followed while requirements are gathered. (13)

13. a. Present a detailed overview of any six fundamental software design concepts that act as necessary frame work for good design. (13)

(OR)

b. State the golden rules that serve as a basic for a set of user interface principles. Also, identify four important elements that a software practitioner needs to understand to perform user interface analysis. Examine these elements in detail. (13)

14. a. i) Consider a ticketing system where the children under age 6 are allowed to travel for free, people under 18 as well as senior people older than 65 pay Rs.50/-, white adults need to pay Rs.75/-. Write test cases for testing this system using equivalence class partitioning and boundary value analysis. (8)

ii) What are approaches for integration testing? Bring out the salient features of these approaches. (5)

(OR)

b. i) Why do need to conduct system testing? Categorize its types. Highlight the functions of each type of system testing. (8)

ii) "Debugging is not testing, but considered as a consequence of testing". Comment on this statement. (5)

15. a. Draw the layers of software configuration management. Examine the role of each of these layers in detail. (13)

(OR)

b. How does empirical estimation model differ from decomposition techniques for software project estimation? Give the overall structures of empirical estimation models. Explain how COCOMO model evaluates the software project cost. (13)

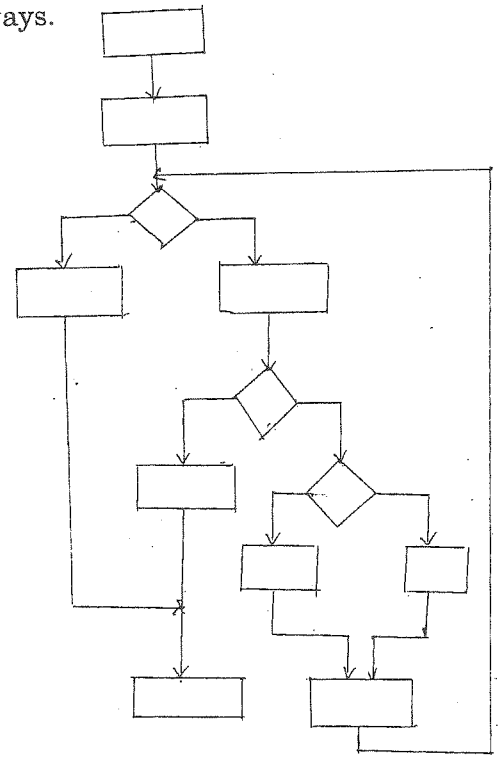
Part – C ($1 \times 15 = 15$ marks)

16. a. i) Consider the evolution of Microsoft windows operating system from Windows 3.1 to Windows 8. We may refer to windows 3.1 operating system as the first version. The product was released and evaluated by the customers, which include the market large. After getting feedback from the customers about Windows 3.1, Microsoft planned to develop a new version of Windows operating system. Window's 95 was then released with the enhancement and graphical facility. Similarly other versions of windows operating system were released with additional capabilities. Suggest a suitable process model for developing windows operating system as mentioned above. Justify your answer with proper explanation. (8)

ii) What is meant by evolutionary approaches for software development? Name the types of evolutionary process models with neat sketches. Illustrate any one of the evolutionary models. (7)

(OR)

b. i) Draw the flow graph for the following flowchart. Find the number of independent paths in the flow graph and list them. Verify by finding cyclomatic complexity in different ways. (9)



ii) How is validity of looping constructs tested? Indicate different ways of loop testing. (6)