

CE6-R3: SOFTWARE QUALITY MANAGEMENT

NOTE:

1. Answer question 1 and any FOUR questions from 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.

- a) What do you understand by the term software quality? List important attributes of Quality, which all software products should have. Explain each of them.
- b) Software inspection is static method for Software Quality review. List various participants of software inspections and describe their roles in it.
- c) Distinguish between error and failure in terms of Software Defect. Which of the two is detected by Software testing? Justify your answer.
- d) Distinguish between software quality and reliability? Can a software be correct and still not exhibit good quality? Can a software be correct and still not be reliable?
- e) How is McCabe's Cyclomatic complexity metric useful? Analyze the usefulness of McCabe's Cyclomatic complexity.
- f) What is the need of Software Quality Certification in Software Quality Assurance? Briefly explain major certification related to Software Quality Assurance.
- g) List common types of risks that typical Software project might suffer from. Briefly explain the risk of schedule slippage for a medium size project.

(7x4)

2.

- a) "Quality of software can't be completely evaluated until the software is completely developed". Justify this statement. What is Quality Assurance? How is it different from Quality Control?
- b) Describe the goal of Software Quality Assurance. Describe Software Quality Assurance planning document.
- c) Discuss how the reliability changes over the lifetime of software and hardware product. Define three metrics to measure software reliability.

(7+5+6)

3.

- a) Identify the types of defects that you would be able to detect during the following:
Code Walk through and Code Inspection.
Give difference between Code Walk through and Code Inspection.
- b) What are software reliability growth models? Explain any one model for software reliability.
- c) What is the meaning of FTR (Formal Technical Review)? What are the guidelines to review software product? List and explain various activity involve in software audit.

(6+4+8)

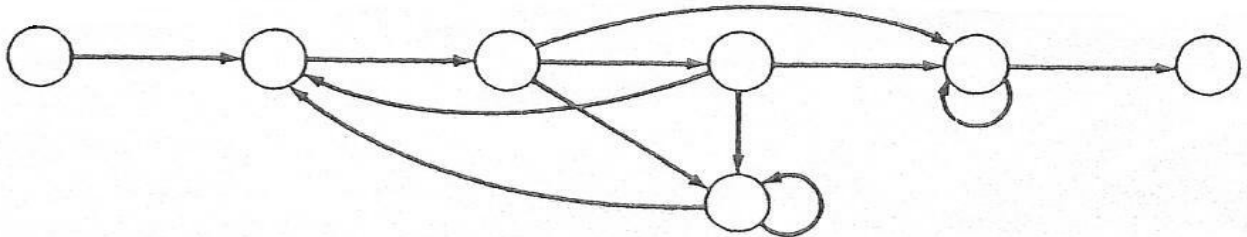
4.

- a) What is the meaning of measure, measurement and metric? How are they related to each other? What is the difference between Product and Process Quality metrics?
- b) Reliability and Safety are related concepts; but they are fundamentally different in number of ways. Discuss it.
- c) Usability of software product is tested during which type of testing? How is usability tested? Suppose development software has successfully passed all the three levels of testing. Can we claim that the software is defect free?

(7+3+8)

5.

- a) List various requirements for awarding the ISO 9000 and CMM model. Discuss strength and weaknesses of ISO 9000 and CMM.
- b) Explain process of identification of Risks that project is susceptible to. Which are the steps the project manager should take to manage these Risks for large software?
- c) Compute the cyclomatic complexity of the following:



(7+7+4)

6.

- a) What is the method of estimating software quality? What is to be done in subcontracting and quality auditing?
- b) Discuss the aspects you would look into, if you are a project manager of Software Company and your company is currently at CMM level-3. Also mention the difference in your operation methodology, if your company succeeds in getting CMM level-4.
- c) What is the meaning of software maintenance? What are the different types of maintenance which software product might need? Why is such maintenance required?

(7+7+4)

7.

- a) List and explain Software Quality Assurance activities and various issues related to them.
- b) Discuss the process model for Software maintenance. How to estimate Software maintenance cost?
- c) Describe various process risks involved in Software development with its priority or impact.

(6+6+6)