If the aggregate marks of an eligible candidate are more than 240, he will be eligible for scholarship course, otherwise he will be eligible for normal course. The program reads the marks in the three subjects and generates the following outputs :

(i) Not eligible

(ii) Eligible for scholarship course

(iii) Eligible for normal course

Design the test cases for this software using decision table-based testing. (9)

(b) Define Static Testing. What are various methods for performing static testing? (6)

6. (a) Explain CMM in detail. Also discuss various key process areas (KPA's) at various maturity levels. (9)

(b) Discuss in detail various software quality attributes given by ISO 9126. Also discuss in detail about various activities performed by software quality assurance group. (6)

7. (a) What is the need for Software configuration management? Discuss in detail various configuration management functions and activities. (9)

(b) Discuss the need of software maintenance. What are various categories of software maintenance? (6)

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602202

May 2024

MCA 2nd SEMESTER

Software Engineering (MCA-20-106)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) What are the advantages of developing a prototype of a system? (1.5)

(b) Differentiate between functional and non-functional requirements. (1.5)

(c) Explain how bug affects the economics of testing. (1.5)

(d) Define Coupling and Cohesion. (1.5)

(e) What are the advantages of static testing as compared to dynamic testing? (1.5)

(f) What are software metrics? What is the significance of software metrics? (1.5)

(g) Differentiate between Quality and Reliability. (1.5)

(h) List the important properties of a modular system. (1.5)

(i) Define the following : Failure, Fault and Error. (1.5)

(j) Differentiate between Effective & Exhaustive Testing. (1.5)

PART–B

2. (a) Define Software Engineering. Discuss various software myths. (6)

(b) Discuss the significance and use of requirement engineering. Discuss in detail the various requirement elicitation techniques with their merits and demerits. (9)

3. (a) Discuss the Spiral Model of software development process in detail. (9)

(b) Consider a project with the following parameters :

(i) External Inputs : 10 with low Complexity, 15 with Average and 17 with high Complexity.

(ii) External Outputs : 06 with low Complexity and 13 with high Complexity.

(iii) External Inquiries : 03 with low Complexity, 04 with Average and 02 with high Complexity.

(iv) Internal logical files : 02 with Average and 01 with high Complexity.

(v) External interface files : 09 with low Complexity.

In addition to the above, system requires (1) Significant Data Communication, (2) Performance is very critical, (3) Designed code may be

moderately reusable (4) System is not designed for multiple installations in different organisations. Other complexity adjustment factors are treated as average. Compute the function point for the same. (6)

4. (a) Consider a project to develop a full screen editor. The major components identified are (1) Screen edit, (2) Command language interpreter, (3) File input and output, (4) Cursor movement, and (5) Screen movement. The sizes for these are estimated to be 4K, 2K, 1K, 2K and 3K delivered source code lines. Use COCOMO model to determine :

(i) Overall cost and schedule estimates (assume values for different cost drivers, with at least three of them being different from 1.0). Take values for 4 cost drivers as 1.15,1.15, 0.86 and 1.07.

(ii) Cost and Schedule estimates for different phases. (9)

(b) A software has to be developed for automating the manual railway reservation system. Draw use case diagram explaining all actors and flow of events. (6)

5. (a) A university is admitting students in a professional course subject to the following conditions :

(1) Marks in Java >=70

(2) Marks in C++ >= 60

(3) Marks in OOAD >=60

(4) Total in all three subjects >= 220 OR Total in Java and C++ >= 150