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REVA UNIVERSITY
Bengaluru, India

Sixth Semester B Tech C3 Examination May/June 2017
Course (Subject): Software Engineering and Testing
Course Code:BTCS15F6100

Time: 3 hours **Max. Marks: 100**

Note: *Answer ONE FULL question from each section.*

SECTION-I (UNIT –I)

1. a) Software product provides the services as well other associated attributes that reflect the quality of that software. These attributes not directly concerned with what the software does, rather they reflect its behavior while it is executing and the structure and organization of the source program. Explain the essential attributes of a good software. 8

   b) Software engineering is carried out within a legal and social framework that limits the freedom of engineers. What are the professional and ethical responsibility that the software engineers must accept that their job involves wider responsibility than simply the application of technical skill as well as prescribed in IEEE/ACM? 12

   c) It may be necessary to make rapid changes to legacy systems. We will need new tools and techniques as well as innovative ways of combining and using existing software engineering methods. What are the challenges the software engineering facing in 21st century? 5

OR

2. a) The implementation stage of software development is the process of converting a system specification in to an executable system software design is a description of the structure of the software to be implemented, the data which is part of the system, the interfaces between the system components and algorithms used. Explain the specific design process activities with a neat diagram. 10

   b) Change is inevitable in all large software projects. The system changes as the business procuring the system responds to external pressures. Discuss the incremental delivery with a neat diagram with its advantages. 8

   c) The dependability of a computer system is a property of the system that equates to its trustworthiness means degree of user confidence that the system will operate as they expect and that the system will not fail in normal use. Explain the principal dimensions of dependability along with extensions 7

SECTION-II (UNIT – II)

3. a) More time is spent on how the system should be developed than on program development and testing. Dissatisfaction with these heavyweight approaches to software engineering, new techniques allowed the development team to focus on the software itself rather than on its design and documentation. Discuss all the principles of agile methods and its difficulties. 12

   b) Requirement that are not directly concerned with the specific services delivered by the system to its users are nonfunctional requirements. Which arise through user needs because of budget constraints, organizational policies. The need for interoperability with other software or hardware systems. With a neat sketch explain the types of non functional requirements. 6

   c) Program evolution dynamics is the study of system change carried out with several empirical studies with a view to understanding more about characteristics of software evolution. These are systems in which the requirements are changing to reflect changing business needs. Describe any seven Lehman's law for evolution 7

OR

PTO

4. a) In Extreme programming, requirements are expressed as scenarios, which are implemented directly as a series of tasks. With a neat diagram explain the extreme programming release cycle and its practices. 15

b) The requirement document has a diverse set of users, ranging from senior management of the organization that is paying for developing for the system to the engineers responsible for developing the software. Describe all the users of a requirement document 5

c) Requirement validation is the process of checking that requirements actually define the system that the customers really want. Discuss different types of checks should be carried out on the requirements in requirement document. 5

SECTION-III (UNIT – III)

5. a) Explain the test plan for a large and complex system as well as setting out the testing schedule and procedures, the test plan defines hardware and software resources that are required. This is useful for system managers who are responsible for ensuring that these resources are available to the testing team. 7

b) Verification and validation is an expensive process. For some systems, such as real time systems with complex non functional constraints, more than half the system development budget may be spent on verification and validation. Explain with a neat diagram the software development process model. 6

c) The name clean room was derived by analogy with semiconductor fabrication units where defects are avoided by manufacturing in an ultraclean atmosphere. With a neat sketch explain the clean room development process and key strategies to software development 12

OR

6. a) Software inspections can be used at all stages of the software process. Starting with the requirements, any readable representations of the software can be inspected where inspections and testing play complementary roles in the software process. Explain the static and dynamic verification and validation with a neat diagram. 8

b) Testing is more concerned with discovering faults in a product. Levels of testing echo the levels of abstraction found as such in SDLC. Explain the levels of abstraction and testing in waterfall model 10

c) Much of testing literature is mired in confusing terminology, probably because testing technology has evolved over decades. State the various terminologies started by IEEE computer society with respect to testing. 7

SECTION-IV (UNIT – IV)

7. a) The best known form of structural testing is based on a construct known as a decision-to-decision path. The name refers to a sequence of statements that, begins with the outway of a decision statement and ends with the inway of the next decision statement. Draw the program graph for the triangle problem and list out the DD-Paths. Write the necessary pseudo code to draw the program graph. 15

b) Brief about the boundary value analysis. Develop a BVA test cases for the triangle problem of 3 variables a, b, c. Note that variable ranges are 1<=a<=200, 1<=b<=200 and 1<=c<=200. 10

OR

8. a) Develop a limited entry refined decision table for the triangle problem by considering improved triangle problem conditions. The improved triangle problem conditions are a<b+c, b<a+c, and c<a+b. 15

b) Explain the following: 10

i. McCabe's basis path

ii. Slice-Based Testing

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