

MCA
(SEM III) THEORY EXAMINATION 2022-23
SOFTWARE TESTING & QUALITY ASSURANCE

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20

- (a) Discuss error, fault & failure with respect to Software testing.
- (b) Give steps involved in Test Case Design?
- (c) There are some limitations of boundary value analysis technique and Equivalence class partition. Discuss.
- (d) Differentiate between Verification and Validation.
- (e) Determine the reasons which are responsible for changes in the software.
- (f) Summarize in brief about object oriented testing.
- (g) Explain at least ten major points for good code writing practices.
- (h) Summarize web Testing Checklist.
- (i) Write different popular debugging approaches.
- (j) Determine the role of risk matrix for the reduction of test cases?

SECTION B

2. Attempt any three of the following: 10 x 3 = 30

- (a) Describe the following verification methods:
- (b) Explain the followings:
 - (i) Peer views
 - (ii) Walkthroughs
 - (iii) Inspections
- (c) What is the cause-effect graphing technique? What are basic notations used in a cause effect graph? Why and how are constraints used in such a graph?
- (d) Outline the differences between regression testing and development testing. Do we perform regression testing before the release of the software?
- (e) Zero Defect Software is dependent on the definition of test adequacy criteria. Comment and illustrate your view.

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10

- (a) Explain various means for quality of software and explain the concept of SQA in detail.
- (b) Explain various “features and characteristics” of software that define its quality?

4. Attempt any one part of the following: 10 x 1 = 10

- (a) Consider a program to multiply and divide two numbers. The inputs may be two valid integers (say a and b) in the range of [0, 100].

- (i) Create equivalence class and generate test cases
 - (ii) Develop a decision table and generate test cases
 - (iii) Design a cause-effect graph and write test cases accordingly.
- (b) Describe each phase of SDLC & STLC in detail with diagram.

5. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Explain the following:
- (i) Modification traversing test cases
 - (ii) Modification revealing test cases
- (b) Explain the various steps of the regression testing process. Which step is the most important and why?

6. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Illustrate the SQA architecture with its components. Should QA's resolve production issues?
- (b) Calculate to maximize the function $f(X)=X^2$. Using Genetic algorithm, where X varies between 1 and 32. Consider initial population of size 4.

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Demonstrate various levels of testing? Which testing level is easy to test and why?
- (b) Illustrate all necessary steps of withdrawing cash from an ATM machine. Generate test cases using class testing.