



PAPER ID-311118

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Subject Code: KCA024

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**MCA**  
**(SEM III) THEORY EXAMINATION 2024-25**  
**SOFTWARE TESTING & QUALITY ASSURANCE**

**TIME: 3 HRS****M.MARKS: 100****Note:** Attempt all Sections. In case of any missing data, choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

| Q no. | Question                                                                                     | CO | Level |
|-------|----------------------------------------------------------------------------------------------|----|-------|
| a.    | Differentiate between verification and validation.                                           | 1  | 1     |
| b.    | What is error, fault and failure?                                                            | 1  | 1     |
| c.    | Discuss the concept of debugging.                                                            | 2  | 2     |
| d.    | What are the steps involved in test case design.                                             | 2  | 1     |
| e.    | Write different popular debugging approaches.                                                | 3  | 2     |
| f.    | What is ISO? Explain ISO model.                                                              | 3  | 1     |
| g.    | Explain the concept of BVA(boundary value analysis) and ECP(equivalence class partitioning). | 4  | 2     |
| h.    | Explain points for good code writing practices.                                              | 4  | 2     |
| i.    | Explain the term SQA and components of SQA.                                                  | 5  | 2     |
| j.    | Explain Taguchi Quality loss function.                                                       | 5  | 2     |

**SECTION B****2. Attempt any three of the following:****10 x 3 = 20**

| Q no. | Question                                                                                                                                              | CO | Level |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------|
| a.    | Illustrate all necessary steps of purchasing a product from an e-commerce website. Generate test cases using class testing.                           | 1  | 3     |
| b.    | 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? | 2  | 1     |
| c.    | Explain defect injection and how you will insert defect in code                                                                                       | 3  | 2     |
| d.    | Explain the various steps of the regression testing process. Which step is the most important and why?                                                | 4  | 2     |
| e.    | Zero Defect Software is dependent on the definition of test adequacy criteria. Comment and illustrate your view.                                      | 5  | 3     |

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

| Q no. | Question                                                                            | CO | Level |
|-------|-------------------------------------------------------------------------------------|----|-------|
| a.    | Explain various “features and characteristics” of software that define its quality? | 1  | 2     |
| b.    | Explain the following: (i) Peer views (ii) Walkthroughs (iii) Inspections           | 1  | 2     |



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**TIME: 3 HRS****M.MARKS: 100****4. Attempt any one part of the following:****10 x 1 = 10**

| Q no. | Question                                                                                                                                                                                                                                                                                                         | CO | Level |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------|
| a.    | Compare each phase of SDLC & STLC in detail with diagram.                                                                                                                                                                                                                                                        | 2  | 3     |
| b.    | Consider a program to multiply and divide two numbers. The inputs may be two valid integers (say a & 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. | 2  | 3     |

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

| Q no. | Question                                                                                             | CO | Level |
|-------|------------------------------------------------------------------------------------------------------|----|-------|
| a.    | Illustrate the SQA architecture with its components. Should QA's resolve production issues?          | 3  | 3     |
| b.    | Explain the following: (i) Modification traversing test cases (ii) Modification revealing test cases | 3  | 2     |

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

| Q no. | Question                                                                                                                                         | CO | Level |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|----|-------|
| a.    | Illustrate the SQA architecture with its components. Should QA's resolve production issues?                                                      | 4  | 3     |
| 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. | 4  | 3     |

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

| Q no. | Question                                                                            | CO | Level |
|-------|-------------------------------------------------------------------------------------|----|-------|
| a.    | Demonstrate various levels of testing? Which testing level is easy to test and why? | 5  | 3     |
| b.    | What is CMM? Explain in detail. Compare CMM with CMMI.                              | 5  | 1     |