

Software Engineering and Testing (315332)

MSBTE Diploma · K-Scheme · Model Question Paper — Set A

Time: 3 Hours**Max. Marks: 70****Instructions:**

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:**10**

- a) Define software engineering.
- b) State any two needs of a Software Requirement Specification (SRS).
- c) Enlist any four types of software risks.
- d) Define the terms: i) Error ii) Failure
- e) Define Scrum. Name any two Scrum roles.
- f) Enlist any four benefits of a test plan.
- g) Define unit testing.

Q.2 Attempt any THREE of the following:**12**

- a) Explain software engineering as a layered technology with a neat diagram.
- b) Describe Extreme Programming (XP) with a neat labelled diagram.
- c) List and explain the phases of the Software Testing Life Cycle (STLC).
- d) Explain the 4 P's of the management spectrum.

Q.3 Attempt any THREE of the following:**12**

- a) Draw a use case diagram for an Online Food Ordering System with minimum two actors and four use cases.
- b) Prepare a time-line chart for 10 working days (5 days a week) for a Hospital Management System mini-project. Consider the phases of SDLC.
- c) Write any four test cases for the login page of an online banking website.
- d) Draw the defect life cycle and state the working of each state.

Q.4 Attempt any THREE of the following:**12**

- a) Distinguish between prescriptive process model and agile process model. (Any four points)

- b) Describe Six Sigma and explain the phases of DMAIC.
- c) Differentiate between verification and validation. (Any four points)
- d) Draw the flow graph and calculate the cyclomatic complexity of the following function:

```
int sum_even(int n) {  
    int i = 1, s = 0;  
    while (i <= n) {  
        if (i % 2 == 0)  
            s = s + i;  
        i++;  
    }  
    return s;  
}
```

- e) Describe the contents of a Test Summary Report.

Q.5 Attempt any TWO of the following:

12

- a) State the requirements for the following modules of a College Admission System: i) Student registration ii) Fee payment iii) Merit list
- b) Using basic COCOMO, calculate i) Effort ii) Development time iii) Average staff size iv) Productivity for a project of estimated size 300 KLOC in semi-detached mode.
- c) Explain the software process framework with a neat labelled diagram. Describe the generic framework activities and umbrella activities.

Q.6 Attempt any TWO of the following:

12

- a) State the project size estimation techniques. Compute the function points for a project with the following data (all of average complexity): external inputs = 24, external outputs = 46, external inquiries = 20, internal logical files = 6, external interface files = 4. The 14 value adjustment factors are rated 4, 3, 5, 3, 2, 4, 4, 3, 5, 2, 3, 1, 2, 4.
- b) Explain the levels of testing (unit, integration, system and acceptance) with a neat diagram.
- c) Write a defect report, using a standard defect template, for a defect found in the cart / checkout module of an online shopping website.

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in