

Software Engineering and Testing (315332)

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

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) List any four types of software.
- b) Define SRS. State any two needs of SRS.
- c) Define risk. State the classification of software risks.
- d) Define quality assurance and quality control.
- e) Define defect. Give one example.
- f) Define system testing.
- g) State the objectives of project planning.

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

- a) Describe the layers of software engineering with a neat diagram. Why is quality focus called the bedrock?
- b) Explain the Waterfall model with a neat diagram.
- c) Explain Adaptive Software Development (ASD) w.r.t. i) Speculation ii) Collaboration iii) Learning.
- d) Draw level 0 and level 1 DFD for a Hostel Management System.

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

- a) Draw a use case diagram for an ATM system with minimum two actors and four use cases.
- b) Explain static testing and dynamic testing.
- c) Describe any four core principles of software engineering practice.
- d) Explain test management and test infrastructure management.

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

- a) State project size estimation techniques. For an Online Examination System, the three-point LOC estimates of the functions are given below. Estimate the total

LOC and the effort if the average productivity is 620 LOC per person-month.

Function	Optimistic	Most likely	Pessimistic
User interface and login	1500	2000	3100
Question bank management	2200	3000	4400
Exam conduct and timer	2600	3400	5000
Result processing	1300	1800	2900
Reports and analytics	900	1400	2000

- Explain CMMI levels with a neat diagram.
- Compare black box testing and white box testing. (Any four points)
- State the need of software metrics and measurement. Differentiate product and process metrics.
- Distinguish between test strategy and test plan.

Q.5 Attempt any TWO of the following:

12

- Prepare a macro time-line chart for 15 working days (5 days a week) for an Online Examination System. Consider the phases of SDLC.
- Using basic COCOMO, calculate the effort and development time for a project of estimated size 120 KLOC in organic, semi-detached and embedded modes.
- State the requirements for the following modules of a Pharmacy (Medical Store) Management System: i) Medicine stock ii) Billing iii) Supplier

Q.6 Attempt any TWO of the following:

12

- Draw a neat labelled diagram showing the translation of the requirements model into the design model and explain it.
- For the following function draw the flow graph, find the cyclomatic complexity by three methods, list the independent paths and design test cases:

```
char grade(int m) {
    char g;
    if (m < 0 || m > 100) g = 'X';
    else if (m >= 75) g = 'D';
    else if (m >= 60) g = 'F';
    else if (m >= 40) g = 'P';
    else g = 'R';
    return g;
}
```

- Describe Six Sigma. Explain the phases of DMAIC and DMADV.

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