

Software Engineering and Testing (315332)

MSBTE Diploma · K-Scheme · Information Technology (IF) Sem 5 · Important Questions (unit-wise)

Note: Based on MSBTE papers S-2024...S-2026 available on msbte.ac.in — for this K-scheme course only **W-2025 and S-2026** exist so far — and the K-scheme syllabus. Practice guidance only — not a prediction of the exam.

Probability: **High** = asked in both papers · **Medium** = asked in one paper · **Low** = in syllabus, not asked yet. With only two papers, these ratings are a rough guide; study every unit.

Exam pattern (both papers): 3 hours, 70 marks · Q.1 any 5 of 7 (2 M) · Q.2, Q.3 any 3 of 4 (4 M) · Q.4 any 3 of 5 (4 M) · Q.5, Q.6 any 2 of 3 (6 M). Unit weightage (syllabus): I – 12, II – 16, III – 16, IV – 14, V – 12 marks.

Unit I — Basics of Software Engineering (12 M)

Question / topic	Marks	Asked in	Probability
Agile process models — ASD, Scrum, Extreme Programming <i>Explain adaptive software development w.r.t. speculation, collaboration. / Define scrum. / Describe extreme programming with proper diagram.</i>	2, 4	W-25 Q3a, S-26 Q1f, S-26 Q4a	High
Software engineering — layered technology approach (diagram) <i>Explain software engineering layered approach with suitable diagram. / Explain software engineering as layered technology approach.</i>	4	W-25 Q2a, S-26 Q3a	High
Define software engineering <i>Define software engineering.</i>	2	W-25 Q1a	Medium
Types of software <i>List any four types of software.</i>	2	S-26 Q1a	Medium
Waterfall model (diagram) <i>Explain waterfall model with neat diagram.</i>	4	W-25 Q2b	Medium
Core principles of software engineering practice <i>Describe four core principles of software engineering practice.</i>	4	W-25 Q2c	Medium
Principles of good planning (planning practice) <i>Describe four principles of good planning.</i>	4	W-25 Q4b	Medium
Prescriptive process model vs agile process model <i>Distinguish between prescriptive process model and Agile process model.</i>	4	W-25 Q4a	Medium
Software process framework — framework and umbrella activities (diagram) <i>Explain software process framework with neat labelled diagram and describe framework activities.</i>	6	S-26 Q6b	Medium

Incremental, RAD, prototyping, spiral models; selection criteria of a process model; characteristics of software	—	— (not asked yet)	Low
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Unit II — Software Requirement, Modeling and Design (16 M)

Question / topic	Marks	Asked in	Probability
Need of SRS <i>State the need of SRS. / State the need of software requirement specification.</i>	2	W-25 Q1b, S-26 Q1d	High
Requirements for given modules of a system (employee management, online shopping) <i>Identify and enlist requirement for modules of employee management software. / State requirements for order, accountant and categories modules of online shopping system.</i>	6	W-25 Q5a, S-26 Q5a	High
Use case diagram (library / hotel management) <i>Draw use case diagram for Library with minimum four use cases and two actors. / Sketch use-case diagram for Hotel Management System.</i>	4	W-25 Q3b, S-26 Q3b	High
Define requirement analysis <i>Define the term requirement analysis.</i>	2	W-25 Q1f	Medium
DFD level 0 and level 1 for a system <i>Draw DFD0 and DFD1 diagram for library management system.</i>	4	S-26 Q2a	Medium
Translating requirement model into design model (diagram) <i>Draw neat labelled diagram for translation of requirement model into design model and explain.</i>	4	S-26 Q4b	Medium
Design concepts — abstraction, information hiding <i>Define abstraction, information hiding.</i>	2	S-26 Q1g	Medium
Requirement engineering tasks; types of requirements; SRS format and characteristics; modularity, patterns; structured flowcharts	—	— (not asked yet)	Low

Unit III — Software Project Management (16 M)

Question / topic	Marks	Asked in	Probability
Timeline chart for a system (5 days a week, SDLC phases) <i>Prepare time line chart for library management system for five days a week. / Prepare macro time line chart for 15 days of college management system.</i>	4, 6	W-25 Q5b, S-26 Q2b	High

COCOMO numerical (effort, development time, staff, productivity) <i>800 KLOC embedded: effort, development time, average staff, productivity. / 500 KLOC organic and semi-detached: effort and development time.</i>	6	W-25 Q6a, S-26 Q5b	High
Project size estimation techniques (LOC, FP) <i>State project size estimation techniques and explain any one. / State project size estimation techniques and explain any one.</i>	4, 6	W-25 Q2d, S-26 Q6a	High
Classification / types of risk <i>State classification of Risk. / Enlist four types of risks.</i>	2	W-25 Q1c, S-26 Q1e	High
Management spectrum — 4 P's <i>Explain the 4 P's management spectrum.</i>	4	W-25 Q3c	Medium
Objective of project planning <i>What is the objective of project planning.</i>	2	W-25 Q1g	Medium
Basic principles of project scheduling <i>List and explain basic principle of Project Scheduling.</i>	4	S-26 Q4e	Medium
CPM / PERT network; Gantt chart; RMMM strategy; COCOMO II; function point numerical	—	— (not asked yet)	Low

Unit IV — Basics of Software Testing (14 M)

Question / topic	Marks	Asked in	Probability
Six Sigma — DMAIC and DMADV <i>Describe six sigma and state the phases of DMAIC and DMADV. / Describe six sigma and state the phases of DMAIC and DMADV.</i>	4, 6	W-25 Q4d, S-26 Q5c	High
Quality assurance and quality control (definitions, differences) <i>Define software quality control and quality assurance. / Distinguish between quality assurance and quality control (six points).</i>	2, 6	W-25 Q1d, W-25 Q6b	Medium
Test case design for a given screen / scenario <i>Write test case for login window for railway reservation system. / Design test cases for booking seat in bus, Pune to Nashik (six test cases).</i>	4, 6	S-26 Q3c, S-26 Q6c	Medium
Define defect (error, fault, failure, bug) <i>Define Defect.</i>	2	W-25 Q1e	Medium
Static and dynamic testing <i>Explain static and dynamic testing.</i>	4	W-25 Q4c	Medium
CMMI (levels, diagram) <i>Explain CMMI with neat diagram.</i>	4	W-25 Q3d	Medium

System testing (levels of testing) <i>Define system testing.</i>	2	S-26 Q1b	Medium
Software testing life cycle (STLC) <i>List and explain software testing life cycle (STLC).</i>	4	S-26 Q2c	Medium
Verification vs validation <i>Differentiate verification and validation (any four points).</i>	4	S-26 Q4c	Medium
White box vs black box testing; cyclomatic complexity (basis path); unit, integration, acceptance testing; when to start / stop testing	—	— (not asked yet)	Low

Unit V — Test and Defect Management (12 M)

Question / topic	Marks	Asked in	Probability
Test plan — benefits; test strategy vs test plan <i>Distinguish between test strategy and test plan. / Enlist benefits of test plan.</i>	2, 4	W-25 Q4e, S-26 Q1c	High
Test management and test infrastructure <i>Explain Test Management and Test Infrastructure in detail.</i>	6	W-25 Q5c	Medium
Defect report using defect template <i>Write any one defect report using defect template.</i>	6	W-25 Q6c	Medium
Test summary report (test reporting) <i>Describe the contents of “Test Summary Report” used in test reporting.</i>	4	S-26 Q2d	Medium
Defect life cycle (diagram) <i>Draw defect life cycle. State the working of each phase.</i>	4	S-26 Q3d	Medium
Need of metrics and measurement <i>State need of metrics and measurement.</i>	4	S-26 Q4d	Medium
Types / classification of defects; manual vs automation testing; product vs process metrics	—	— (not asked yet)	Low

Most repeated topics (all units)

1. Agile process models — ASD, Scrum, Extreme Programming — asked 3 time(s) in 2 paper(s) (W-25, S-26)
2. Requirements for given modules of a system (employee management, online shopping) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
3. Timeline chart for a system (5 days a week, SDLC phases) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
4. COCOMO numerical (effort, development time, staff, productivity) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
5. Project size estimation techniques (LOC, FP) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
6. Six Sigma — DMAIC and DMADV — asked 2 time(s) in 2 paper(s) (W-25, S-26)
7. Software engineering — layered technology approach (diagram) — asked 2 time(s) in 2 paper(s) (W-25, S-26)

8. Use case diagram (library / hotel management) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
9. Test plan — benefits; test strategy vs test plan — asked 2 time(s) in 2 paper(s) (W-25, S-26)
10. Need of SRS — asked 2 time(s) in 2 paper(s) (W-25, S-26)

Numericals / practical-type answers to practise: COCOMO (effort, development time, staff, productivity), size estimation (LOC three-point estimate, function points), timeline chart for a given number of days, test cases for a given screen, defect report in a template, cyclomatic complexity with flow graph (white-box testing). The model papers (Set A, B, C) on our website contain solved examples of each.

Note: This is a **list of important questions 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

