

Software Engineering (315323)

MSBTE Diploma · K-Scheme · Computer Engineering Sem 5 · Important Questions (unit-wise)

Note: Based on MSBTE papers W-2025 and S-2026 (the only two K-scheme papers of this course available on msbte.ac.in) 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 – 14, III – 16, IV – 12, V – 8, VI – 8 marks.

Unit I — Software Development Process (12 M)

Question / topic	Marks	Asked in	Probability
Define software engineering <i>Define Software engineering. List any two categories of software. / Define Software Engineering.</i>	2	W-25 Q1b, S-26 Q1b	High
Types / categories of software <i>List any two categories of software. / Enlist the types of software.</i>	2	W-25 Q1b, S-26 Q1a	High
Attributes / characteristics of good software <i>Enlist any four attributes of a good software. / State any four Software characteristics.</i>	2, 4	W-25 Q1a, S-26 Q4a	High
Spiral model (phases / working, diagram) <i>Describe phases in spiral model with neat labelled diagram (six regions). / Describe the working of the spiral model using an example.</i>	4	W-25 Q4a, S-26 Q2a	High
RAD model (diagram, phases, when to use) <i>Explain RAD Model: diagram, phases, when to use.</i>	6	W-25 Q5a	Medium
Waterfall model (phases, merits, demerits) <i>Describe Waterfall Model with all phases; merits and demerits.</i>	6	S-26 Q5a	Medium
Adaptive Software Development (ASD) <i>Explain ASD: focus of ASD, steps in ASD.</i>	4	W-25 Q2a	Medium
Prototyping / incremental model	—	— (not asked yet)	Low
Agile: Extreme Programming (XP), Scrum, DSDM, Crystal, AUP	—	— (not asked yet)	Low
Layered technology; software development framework	—	— (not asked yet)	Low

Unit II — Software Requirement Engineering (14 M)

Question / topic	Marks	Asked in	Probability
Software deployment principles <i>Explain any two principles of deployment. / State any four principles of software deployment practice.</i>	2	W-25 Q1c, S-26 Q1c	High
Core principles of software engineering <i>State the core principles of Software Engineering.</i>	4	S-26 Q3a	Medium
Communication practice principles <i>Describe any six principles of communication practices.</i>	6	W-25 Q6a	Medium
Planning practice principles <i>Describe any four planning principles.</i>	4	W-25 Q3a	Medium
Requirement elicitation techniques <i>Explain requirement elicitation techniques.</i>	4	S-26 Q3b	Medium
Recognise requirements of a given system (functional requirements) <i>Recognize requirement for patient and doctor modules of hospital management software.</i>	4	W-25 Q4b	Medium
SRS — definition, format, characteristics <i>Define SRS. Describe SRS format; two characteristics.</i>	6	S-26 Q6a	Medium
Modelling / construction principles; types of requirements; negotiation, validation	—	— (not asked yet)	Low

Unit III — Software Modelling and Design (16 M)

Question / topic	Marks	Asked in	Probability
Elements of analysis model <i>Explain elements of Analysis Model with neat diagram. / Explain the elements of Analysis model.</i>	4	W-25 Q2b, S-26 Q2b	High
Fundamental design concepts (abstraction, modularity, ...) <i>Define: Abstraction, Modularity. / Describe any six fundamental design concepts with example.</i>	2, 6	W-25 Q1d, S-26 Q5b	High
Use case diagram (hotel / library system) <i>Use case diagram for hotel management system (4 use cases, 2 actors). / Use case diagram for library management system.</i>	4	W-25 Q3b, S-26 Q4b	High
Testing comparisons: black box vs white box; static vs dynamic <i>Compare white box and black box testing (4 points). / Differentiate Static and Dynamic Testing (4 points).</i>	4	W-25 Q3c, S-26 Q3d	High
DFD — notations / symbols <i>Enlist the notations used in DFD with symbols.</i>	4	W-25 Q2c	Medium

DFD — context (level 0) and level 1 for a system <i>Level 0 and Level 1 DFD for library management system.</i>	6	W-25 Q5b	Medium
Decision table for given rules <i>Decision table for employee insurance scheme.</i>	4	W-25 Q3d	Medium
Data modelling (definition) <i>Define Data Modelling in Software Engineering.</i>	2	S-26 Q1d	Medium
Sequence diagram with example <i>Draw and explain sequence diagram with suitable example.</i>	4	S-26 Q3c	Medium
V-model of software testing <i>Explain the V-Model of Software Testing.</i>	4	S-26 Q2c	Medium
Class diagram; structured flowcharts; levels of testing	—	— (not asked yet)	Low

Unit IV — Software Project Cost Estimation (12 M)

Question / topic	Marks	Asked in	Probability
Management spectrum — 4 P's <i>Explain management spectrum. / State the meaning of 4 P's of management spectrum.</i>	2, 4	W-25 Q4e, S-26 Q1e	High
COCOMO model (numerical: effort, time for 3 modes) <i>400 KLOC: effort and development time for organic, semidetached, embedded. / Describe COCOMO model with suitable example.</i>	4, 6	W-25 Q6b, S-26 Q4e	High
Risk — definition, characteristics, analysis & management (RMMM) <i>Define Risk; two characteristics of risk. / Steps in Risk Analysis and Management.</i>	2, 6	W-25 Q1e, S-26 Q6b	High
Function point metric for size estimation <i>Explain function point metrics for size estimation.</i>	4	S-26 Q2d	Medium
LOC metric; heuristic / analytical / empirical estimation; COCOMO II	—	— (not asked yet)	Low

Unit V — Software Project Management (8 M)

Question / topic	Marks	Asked in	Probability
Principles of project scheduling <i>Explain any four principles of project scheduling. / Explain four basic principles of project scheduling.</i>	4	W-25 Q2d, S-26 Q4c	High
CPM / PERT (theory + network numerical) <i>Three time estimates of PERT; network, critical path, duration. / Explain CPM and PERT.</i>	6	W-25 Q5c, S-26 Q5c	High

Work breakdown structure (WBS) <i>State any two advantages of WBS.</i>	2	W-25 Q1f	Medium
Gantt chart (use) <i>State the use of Gantt Chart.</i>	2	S-26 Q1f	Medium
Earned Value Analysis (SV, CV, SPI, CPI) <i>Describe EVA: SV, CV, SPI, CPI.</i>	4	W-25 Q4c	Medium
Timeline chart; activity network	—	— (not asked yet)	Low

Unit VI — Software Quality Assurance (8 M)

Question / topic	Marks	Asked in	Probability
Software Quality Assurance — definition, objectives, phases <i>List any two objectives of SQA. / Define Software Quality Assurance.</i>	2, 6	W-25 Q1g, S-26 Q1g, S-26 Q6c	High
CMMI levels / model with diagram <i>Explain CMMI levels: diagram, description of each level. / Explain CMMI model with neat diagram.</i>	4	W-25 Q4d, S-26 Q4d	High
Six Sigma — DMAIC, DMADV <i>Explain DMAIC and DMADV; apply six sigma to hotel management system.</i>	6	W-25 Q6c	Medium
SQM vs SQA; CMMI process areas	—	— (not asked yet)	Low

Most repeated topics (all units)

1. Software Quality Assurance — definition, objectives, phases — asked 3 time(s) in 2 paper(s) (W-25, S-26)
2. Fundamental design concepts (abstraction, modularity, ...) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
3. COCOMO model (numerical: effort, time for 3 modes) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
4. Risk — definition, characteristics, analysis & management (RMMM) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
5. CPM / PERT (theory + network numerical) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
6. Attributes / characteristics of good software — asked 2 time(s) in 2 paper(s) (W-25, S-26)
7. Spiral model (phases / working, diagram) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
8. Elements of analysis model — asked 2 time(s) in 2 paper(s) (W-25, S-26)
9. Use case diagram (hotel / library system) — asked 2 time(s) in 2 paper(s) (W-25, S-26)
10. Testing comparisons: black box vs white box; static vs dynamic — asked 2 time(s) in 2 paper(s) (W-25, S-26)

Numericals to practise: COCOMO (effort, development time, staff), function points (UFP, CAF, FP), CPM/PERT network (critical path, duration), earned value (SV, CV, SPI, CPI), decision tables. 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

