

Software Engineering (315323)

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 with one example each.
- b) State the layers of software engineering as a layered technology.
- c) List any four principles of software deployment practice.
- d) Define data modelling. Define data object and attribute.
- e) State the 4 P's of the management spectrum.
- f) Define Work Breakdown Structure (WBS). State any two advantages of WBS.
- g) State any two differences between Software Quality Management (SQM) and Software Quality Assurance (SQA).

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

- a) Explain the RAD model with a neat diagram. State when RAD model should be used.
- b) Describe the following fundamental design concepts: i) Structure ii) Modularity iii) Concurrency iv) Verification
- c) Explain the V-model of software testing with a neat diagram.
- d) Describe the working of the spiral model with an example of an online banking application.

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

- a) Describe any four principles of planning practice.
- b) Draw and explain a sequence diagram for cash withdrawal from an ATM.
- c) Differentiate between static testing and dynamic testing. (Any four points)
- d) Explain functional and non-functional requirements. Classify non-functional requirements into product, organizational and external requirements.

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

- Explain Extreme Programming (XP) with a neat diagram.
- Draw a use case diagram for an Online Examination System with two actors and at least four use cases.
- For a project, at the end of week 10: BCWS = ₹ 1,20,000, BCWP = ₹ 1,00,000 and ACWP = ₹ 1,10,000. The budget at completion (BAC) is ₹ 5,00,000. Calculate SV, CV, SPI and CPI and interpret the project status.
- Describe the CMMI maturity levels and state the process areas at each level.
- Describe the basic COCOMO model with a suitable example.

Q.5 Attempt any TWO of the following:

12

- Explain the prototyping model with a neat diagram. State its advantages and disadvantages.
- Draw a class diagram for a Bank Management System showing classes, attributes, operations, generalization, aggregation and multiplicity.
- Explain the three time estimates used in PERT. For the following project, find the expected time of each activity, draw the network, find the critical path, project duration and its standard deviation.

Activity	A (1–2)	B (1–3)	C (2–4)	D (3–4)	E (3–5)	F (4–6)	G (5–6)
t_o, t_m, t_p (weeks)	2, 3, 4	4, 6, 8	3, 5, 13	2, 3, 4	6, 8, 10	3, 4, 5	2, 3, 10

Q.6 Attempt any TWO of the following:

12

- Explain the requirement engineering tasks with a neat diagram.
- A project has the following information domain values: EI = 32, EO = 60, EQ = 24, ILF = 8, EIF = 2. Assume all weights are average. The 14 value adjustment factors are 4, 3, 2, 4, 3, 5, 4, 3, 3, 4, 2, 3, 1, 4. Compute the function points.
- Explain DMAIC and DMADV methods of Six Sigma. Apply Six Sigma to an Online Food Ordering System.

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