# Software Engineering (315323)

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

**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) State any four characteristics of software.

b) Define software engineering as given by IEEE.

c) Explain any two principles of software deployment practice.

d) Define: i) Modularity ii) Concurrency (w.r.t. software design)

e) Define risk. State two characteristics of risk.

f) Define: i) Critical path ii) Total float (slack)

g) List any four activities of the SQA group.

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

a) Explain Adaptive Software Development (ASD) with respect to: i) Focus of ASD ii) Phases of ASD.

b) Draw and explain the structure of the analysis model.

c) Draw a Gantt chart for the following tasks (duration in weeks; a task starts when all its predecessors are complete):

| Task | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 |
|---|---|---|---|---|---|---|---|---|---|
| **Duration** | 2 | 1 | 2 | 1 | 3 | 3 | 2 | 2 | 1 |
| **Predecessor** | — | T1 | T2 | T2 | T3 | T3, T4 | T5, T6 | T3 | T7, T8 |

(T1 Requirement analysis, T2 SRS, T3 System design, T4 Database design, T5 Front-end coding, T6 Back-end coding, T7 Integration & testing, T8 User manual, T9 Deployment)

d) Describe any four principles of modelling practice.

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

a) Explain the principles of construction practice (coding and testing principles).

b) Draw a use case diagram for an ATM system with at least two actors and four use cases.

c) Explain the levels of software testing.

d) A bank sanctions loans as follows: (i) an applicant aged 21 to 60 with annual income ₹ 3 lakh or more gets the loan approved; (ii) an applicant aged 21 to 60 with income below ₹ 3 lakh gets the loan only if a guarantor is available; (iii) otherwise the loan is rejected. Draw a decision table.

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

a) Explain the incremental process model with a neat diagram.

b) Explain heuristic, analytical and empirical estimation techniques.

c) Describe the basic principles that guide software project scheduling.

d) Explain the CMMI model with its five maturity levels and a neat diagram.

e) Draw an activity diagram for online course registration.

**Q.5 Attempt any TWO of the following:** **12**

a) Describe the spiral model with a neat diagram showing its six task regions. State its advantages and disadvantages.

b) Draw context level (Level 0) and Level 1 DFD for an Online Food Ordering System.

c) Using basic COCOMO, estimate the effort, development time, average staff and productivity for a 45 KLOC project in organic mode. Also compute the effort if the same project is treated as semi-detached and embedded.

**Q.6 Attempt any TWO of the following:** **12**

a) List and describe the phases of Software Quality Assurance.

b) Explain the following scheduling techniques: i) Critical Path Method (CPM) ii) Program Evaluation and Review Technique (PERT). Differentiate between them.

c) Explain the RMMM plan. Prepare a risk table for any four risks of a college ERP project and show how risks are prioritised.

**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