A–0824

Total Pages : 4 **Roll No. .....**

MCS-503

SOFTWARE ENGINEERING

(MCA/MSCIT)

Examination, June 2025

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

Long Answer Type Questions 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Answer the following :

   (a) Explain the basic issues in software engineering. (5 marks)

   (b) Discuss the significance of structured programming in software development. (7 Marks)

   (c) What are the major challenges faced by software engineers during the software development life cycle ? (7 Marks)

2. Answer the following :

   (a) Describe the software life cycle models. (5 marks)

   (b) Explain the waterfall model, its phases, and the advantages and limitations of using this model. (7 marks)

   (c) Discuss the prototyping and spiral models of software life cycles and compare them with the waterfall model. (7 marks)

3. Answer the following :

   (a) Discuss the process of requirements analysis and specification. (5 marks)

   (b) Explain the concept of formal requirement specification and its importance in software development. (7 marks)

   (c) What is algebraic specification, and how is it used in software engineering ? (7 marks)

4. Answer the following :

(a) Explain the basic concepts of software design. (5 marks)

(b) Describe the different approaches to software design, and provide an overview of the current trends in software design. (7 marks)

(c) How does effective software design contribute to the success of a project ? (7 marks)

5. Answer the following :

(a) Discuss the various object modeling techniques using UML. (5 marks)

(b) Explain the use case model and its role in system analysis. (7 marks)

(c) Describe class and interaction diagrams, and activity and state chart diagrams, explaining their importance in object-oriented software development. (7 marks)

Section–B

Short Answer Type Questions 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What is the purpose of data flow diagrams (DFDs) in function-oriented software design ? Describe how a DFD model of a system is created.
2. Explain the concept of object-oriented software development. What is the role of design patterns in this process ?
3. What are the key components of user interface design ? Discuss the types of user interfaces and their applications in modern software systems.
4. Describe the techniques used in black-box and white-box testing. How do these techniques contribute to software testing ?
5. Explain the process of software project planning. Discuss project estimation techniques and the COCOMO model.
6. What is software configuration management ? Discuss the role of risk management in software project monitoring and control.
7. Describe software reliability issues and statistical testing. How does software quality management contribute to the success of a software project ?
8. What are CASE tools ? Explain their characteristics and how they assist in the software development process.

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