

A-0880

Total Pages : 6

Roll No. -----

MCS-503

Software Engineering

(MCA/MSCIT)

1st/ 3rd Semester Examination 2024(Dec.)

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.

P.T.O.

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Section-A (Long-Answer-Type Questions)

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.

[2x19=38]

Q.1. Answer the following:

- a. What are the major phases of the software development life cycle? Explain each phase briefly. [5 marks]
- b. Discuss the advantages and disadvantages of the waterfall model. [7 marks]
- c. Compare the waterfall model with the spiral model, focusing on their differences in handling risk and iteration. [7 marks]

Q.2. Answer the following:

- a. Explain the concept of requirements analysis in software engineering. [5 marks]
- b. What is the significance of functional and non-functional requirements in a software project? [7 marks]

- c. Discuss the importance of formal requirements specification and provide an example of how it is used in software projects. [7 marks]

Q.3. Answer the following:

- a. What is software design? Discuss the importance of software design in the software development process. [5 marks]
- b. Explain the difference between function-oriented and object-oriented design approaches. [7 marks]
- c. How does object-oriented design contribute to the flexibility and maintainability of software systems? [7 marks]

Q.4. Answer the following:

- a. Discuss the concept of user interface design. Why is it important for the success of a software system? [5 marks]
- b. Explain the difference between graphical user interfaces (GUI) and command-line interfaces (CLI). [7 marks]
- c. Describe the components of a typical GUI and how they can be used in component-based GUI development. [7 marks]

P.T.O.

Q.5. Answer the following:

- a. What are the key principles of object-oriented software development? [5 marks]
- b. Explain the role of UML in object modeling, and describe the different types of diagrams used in UML. [7 marks]
- c. Discuss the importance of use case diagrams, class diagrams, and activity diagrams in system design. [7 marks]

Section-B (Short-Answer-Type Questions)

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.
[4x8=32]

Q.1. Define structured programming. How does structured programming improve software development and maintenance?

- Q.2. Explain the concept of software project estimation. Discuss various estimation techniques and their relevance in project planning.
- Q.3. Describe the prototyping model in software development. How does it address the challenges faced by the waterfall model?
- Q.4. What are the different types of software testing? Explain the difference between black-box testing and white-box testing.
- Q.5. Discuss the importance of software maintenance. What are the different types of software maintenance activities, and how do they contribute to the longevity of software systems?

P.T.O.

- Q.6. Explain the concept of software configuration management (SCM). Discuss its importance in managing changes during the software development life cycle.
- Q.7. What is software reliability? How can statistical testing and software quality management improve the reliability of software products?
- Q.8. Discuss the principles of object-oriented design. How do concepts such as encapsulation, inheritance, and polymorphism contribute to software development?
