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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.



UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.

(For those admitted in June 2021 and later)

PROGRAMME AND BRANCH: B.Sc., INFORMATION TECHNOLOGY

| SEM | CATEGORY   | COMPONENT | COURSE CODE | COURSE TITLE         |
|-----|------------|-----------|-------------|----------------------|
| V   | PART - III | CORE      | U21IT508    | SOFTWARE ENGINEERING |

Date &amp; Session: 24.04.2025/AN

Time : 3 Hours

Maximum 75 Marks

| Course Outcome | Bloom's K-level | Q. No. | SECTION – A (10 X 1 = 10 Marks)<br>Answer <u>ALL</u> Questions.   |
|----------------|-----------------|--------|---|
| CO1            | K1              | 1.     | The Capability Maturity Model (CMM) focuses on:<br>a) Software testing<br>b) Process improvement<br>c) User interface design<br>d) Database optimization                              |
| CO1            | K2              | 2.     | COCOMO is primarily used for:<br>a) Code debugging<br>b) Software cost estimation<br>c) Requirement gathering<br>d) User interface design   |
| CO2            | K1              | 3.     | The Work Breakdown Structure (WBS) is used to:<br>a) Decompose project tasks<br>b) Design UML diagrams<br>c) Test software modules<br>d) Manage user interfaces                       |
| CO2            | K2              | 4.     | Prototyping in requirement engineering helps to:<br>a) Finalize the code structure<br>b) Validate user requirements early<br>c) Optimize database queries<br>d) Reduce testing time   |
| CO3            | K1              | 5.     | User Interface Design primarily focuses on:<br>a) Database normalization<br>b) Enhancing user experience<br>c) Code optimization<br>d) Network security                               |
| CO3            | K2              | 6.     | Procedural design in system architecture refers to:<br>a) Defining algorithms and control logic<br>b) Creating UML diagrams<br>c) Writing test cases<br>d) Managing project timelines |
| CO4            | K1              | 7.     | A Use Case Diagram in UML represents:<br>a) Class hierarchies<br>b) Interactions between actors and the system<br>c) Data flow<br>d) Code execution time                              |
| CO4            | K2              | 8.     | Encapsulation in OOP ensures:<br>a) Data hiding and method binding<br>b) Code reusability<br>c) Dynamic memory allocation<br>d) Multi-threading                                       |
| CO5            | K1              | 9.     | Functional testing validates:<br>a) System performance<br>b) Compliance with requirements<br>c) User interface aesthetics<br>d) Database connectivity                                 |
| CO5            | K2              | 10.    | A Test Plan includes:<br>a) Code snippets<br>b) Test objectives, scope, and schedules<br>c) User manuals<br>d) Marketing strategies   |

| Course Outcome | Bloom's K-level | Q. No. | <b>SECTION – B (5 X 5 = 25 Marks)</b><br><b>Answer <u>ALL</u> Questions choosing either (a) or (b)</b> |
|----------------|-----------------|--------|--|
| CO1            | K3              | 11a.   | Explain the Waterfall Model and its limitations.<br><b>(OR)</b>  |
| CO1            | K3              | 11b.   | Calculate the effort for a software project using COCOMO with given parameters (e.g., KLOC = 50).      |
| CO2            | K3              | 12a.   | Describe black-box testing and white-box testing with examples.<br><b>(OR)</b>                         |
| CO2            | K3              | 12b.   | Create a Work Breakdown Structure (WBS) for a library management system.                               |
| CO3            | K4              | 13a.   | Explain the role of data structures in database design. Provide an example.<br><b>(OR)</b>             |
| CO3            | K4              | 13b.   | Design a user interface for an ATM system, highlighting key guidelines.                                |
| CO4            | K4              | 14a.   | Differentiate between static class diagrams and use case diagrams in UML.<br><b>(OR)</b>               |
| CO4            | K4              | 14b.   | Develop a behavior diagram (e.g., sequence diagram) for an online shopping cart.                       |
| CO5            | K5              | 15a.   | Explain system testing and its importance in software quality assurance.<br><b>(OR)</b>                |
| CO5            | K5              | 15b.   | Design test cases for a login functionality, covering valid and invalid inputs.                        |

| Course Outcome | Bloom's K-level | Q. No. | <b>SECTION – C (5 X 8 = 40 Marks)</b><br><b>Answer <u>ALL</u> Questions choosing either (a) or (b)</b>   |
|----------------|-----------------|--------|--|
| CO1            | K4              | 16a.   | Analyze the Spiral Model and compare it with the Agile Model.<br><b>(OR)</b>   |
| CO1            | K4              | 16b.   | Evaluate the CMM levels for process improvement. How do they enhance software development maturity?  |
| CO2            | K5              | 17a.   | Critically assess the role of prototyping in requirement engineering. What are its benefits and challenges?<br><b>(OR)</b>                     |
| CO2            | K5              | 17b.   | Design a Software Requirement Specification (SRS) document for a hospital management system.   |
| CO3            | K5              | 18a.   | Analyze the trade-offs in system architecture design. How do non-functional requirements influence architectural choices?<br><b>(OR)</b>       |
| CO3            | K5              | 18b.   | Evaluate the guidelines for user interface design. How do they address usability and accessibility challenges?                                 |
| CO4            | K6              | 19a.   | Compare structured system analysis and object-oriented analysis. Which is more suitable for complex systems?<br><b>(OR)</b>                    |
| CO4            | K6              | 19b.   | Design a UML static class diagram for an e-commerce system. Include relationships like inheritance and aggregation.                            |
| CO5            | K5              | 20a.   | Analyze the integration of software engineering management with the project life cycle. How does it ensure workflow efficiency?<br><b>(OR)</b> |
| CO5            | K5              | 20b.   | Develop a test plan for a banking application, covering functional, system, and user satisfaction testing.                                     |