KUMARAGURU college of technology
character is life

Register Number:……

MCA DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation R2020)

Third Semester

MASTER OF COMPUTER APPLICATIONS

P20CAT2001: Software Engineering Methodologies and Quality Assurance

COURSE OUTCOMES

CO1: Get an insight into the processes of software development.

CO2: Understand the problem domain and modeling.

CO3: Apply design techniques software products.

CO4: Implement software quality management concepts.

CO5: Apply software testing techniques for information systems development

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion (A): Analyze the role of automated testing in modern software development practices. CO1 [K_2]

   Reason (R): It does not allow for revisiting previous phases once completed.

   a) Both A and R are true, and R is the correct explanation of A.
   b) Both A and R are true, but R is not the correct explanation of A.
   c) A is true, but R is false.
   d) A is false, but R is true.

2. Which of the following is a characteristic of Agile methodologies? CO1 [K_2]

   a) Strict documentation
   b) Customer collaboration
   c) Sequential development
   d) Extensive planning

3. Scenario-Based Requirements Modeling focuses primarily on: CO2 [K_2]

   a) User interactions
   b) Data flow
   c) System architecture
   d) Performance metrics

4. Match the following software models with their characteristics. CO2 [K_2]

Model	Characteristic
A. Spiral	i. Iterative and incremental

B. Prototyping	ii. Risk-driven approach
C. Waterfall	iii. Rapid feedback on requirements
D. Incremental	iv. Sequential phase completion

	A	**B**	**C**	**D**
a)	iv	ii	iii	i
b)	ii	iii	i	iv
c)	i	iii	iv	ii
d)	i	ii	iii	iv

5. What is the primary goal of Software Configuration Management (SCM)? CO3 [K_1]

a) To enhance software performance
b) To control changes and maintain integrity
c) To manage user requirements
d) To facilitate team collaboration

6. Sequencing Type Item: Arrange the following steps in the correct order of the software development lifecycle. CO3 [K_2]

a) Requirements Analysis
b) Implementation
c) Design
d) Testing

7. What is a primary focus of usability testing? CO4 [K_2]

a) System functionality
b) System performance
c) User experience and satisfaction
d) Code quality

8. Assertion (A): Alpha testing is conducted by the end-users. CO4 [K_2]
Reason (R): Beta testing is performed in the production environment.

a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, but R is not the correct explanation of A.
c) A is true, but R is false.
d) A is false, but R is true.

9. Which of the following testing types is designed to ensure that new changes do not adversely affect existing functionalities? CO5 [K_2]

a) Unit Testing
b) Integration Testing
c) Regression Testing
d) Acceptance Testing

10. Which of the following are considered non-functional testing types CO5 [K_2]

a) Performance Testing
b) Usability Testing
c) Unit Testing
d) Security Testing

PART B (10 x 2 = 20 Marks)

11.	Compare and contrast the Waterfall and Agile models in terms of flexibility and risk management.	CO1	[K_3]
12.	Explain the role of a Product Owner in the Scrum framework.	CO1	[K_1]
13.	What are the key components of software architecture? Discuss their significance.	CO2	[K_1]
14.	Define a use case and its role in requirements modeling.	CO2	[K_1]
15.	What is the purpose of creating a prototype in software development?	CO3	[K_2]
16.	Explain the concept of technical debt and its implications for software projects.	CO3	[K_3]
17.	Describe the concept of software quality assurance and its main activities.	CO4	[K_1]
18.	List and explain the different types of software maintenance.	CO4	[K_2]
19.	Describe the process and significance of load testing in software development.	CO5	[K_2]
20.	What is static testing? Provide an example of how it is implemented.	CO5	[K_2]

PART C (10 x 5 = 50 Marks)

21.	Compare and contrast the Spiral model and the Incremental model in terms of their approach to risk management and customer feedback.	CO1	[K_3]
22.	Discuss the significance of effective requirements gathering and the techniques used to elicit requirements.	CO1	[K_2]
23.	Explain the core principles of Agile development and how they differ from traditional development methodologies.	CO2	[K_1]
24.	Discuss the various architectural styles in software design, highlighting their advantages and disadvantages.	CO2	[K_2]
25.	Evaluate the importance of code reviews in maintaining software quality and discuss best practices.	CO3	[K_4]
26.	Analyze the differences between black box testing and white box testing, including their advantages and disadvantages.	CO3	[K_3]
27.	Discuss the significance of SCM in the software development lifecycle and the key processes involved.	CO4	[K_2]
28.	Explain the role of usability testing in the software development process and its impact on user satisfaction.	CO4	[K_2]
29.	Discuss the different types of acceptance testing and their significance in the software delivery process.	CO5	[K_2]
30.	Analyze the challenges associated with managing software quality in large-scale software projects.	CO5	[K_3]

Answer any TWO Questions
PART D (2 x 10 = 20 Marks)

31.	Discuss the Unified Process in detail, including its phases, roles, and artifacts. How does it facilitate iterative development?	CO1	[K_4]
32.	Explain scenario-based requirements modeling in detail. Provide an example illustrating how scenarios can clarify requirements.	CO2	[K_3]
33.	Analyze the role of automated testing in modern software development practices. Discuss its benefits, challenges, and best practices.	CO5	[K_4]

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