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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester:V**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 22AM5PCSED **Max Marks: 100**
Course: Software Engineering & Design Patterns **Date: 27.02.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1 a) List and explain the generic process framework for software engineering. **05**

b) Compare and contrast waterfall model and V model. Which is advantageous and why? **10**

c) Consider a code fragment given below. **05**

```
A = 10;
  if B > C then
    A = B;
  else
    A = C;
  endif
Print A;
Print B;
Print C;
```

Apply the method of cyclomatic complexity analysis to a specific code fragment and determine the complexity value.

UNIT - II

2 a) With an example scenario of an application exemplify the requirement elicitation process and the guidelines. **06**

b) Distinguish between functional & nonfunctional requirements. Give examples. **06**

c) With specific examples elucidate activity diagrams and state diagrams. Show neat sketches. **08**

OR

3	a)	Provide a template with details about the contents of a software requirement specification document.	**07**
	b)	Develop UML use case diagram for an application such as SafeHome home security function and elaborate on the concepts and components.	**08**
	c)	List and summarize the software quality guidelines.	**05**

UNIT - III

4	a)	Outline the concept of software verification & validation and illustrate with a neat diagram the overall strategy for software testing.	**06**
	b)	Explicate & demonstrate white box testing & basis path testing with examples. Assess the advantages of doing this.	**07**
	c)	Distinguish between unit testing and integration testing. Give examples.	**07**

UNIT - IV

5	a)	Provide details about the three-part schema that underlies every design pattern.	**06**
	b)	There are three architectural patterns that provide high-level system subdivisions of different kinds: Layers, Pipes and Filters, and Blackboard. Provide an insightful overview of these patterns.	**08**
	c)	Design and develop an object-oriented implementation of MVC for an interactive system. Identify its advantages.	**06**

OR

6	a)	Two patterns are identified that help when designing for change in the context of adaptable systems. Which are these patterns? Compare & analyse them.	**05**
	b)	Classify various kinds of design patterns and analyse them.	**08**
	c)	Assess the advantages and disadvantages of distributed systems. Introduce the three design patterns related to distributed systems.	**07**

UNIT - V

7	a)	Elucidate the design patterns for structural decomposition and make a comparative analysis of them.	**06**
	b)	Describe the master slave design pattern for organizing work within a system. Justify its advantages.	**07**
	c)	Why is broker architecture pattern used? Identify six types of participating components of the Broker architectural pattern.	**07**

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