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

Autonomous Institute Affiliated to VTU

## September / October 2023 Supplementary Examinations

**Programme: B.E.**

**Branch: Artificial Intelligence and Machine Learning**

**Course Code: 22AM5PCSED**

**Course: Software Engineering & Design Patterns**

**Semester: V**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 14.09.2023**

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

### UNIT - I

1	a) Illustrate the seven principles of Software Engineering Practice.	07
	b) Explain Agile software development. Mention the principles of SCRUM methodology.	08
	c) Illustrate the advantages and disadvantages of Halstead's Software Metrics.	05

### UNIT - II

2	a) Distinguish between functional requirements vs non-functional requirements. Also mention any two functional and non-functional requirements for the "Login and Registration System	08
	b) Compare Extend, Includes and Generalization.	06
	c) Design the use case diagram for library management system.	06

### OR

3	a) Explain the Software Quality Guidelines.	07
	b) What are the benefits of Use Cases?	05
	c) Define cohesion with an example. Explain the levels of cohesion.	08

### UNIT - III

4	a) What is boundary value analysis? Write the Test cases for input box accepting numbers between 1 and 1000 using Boundary value analysis	06
	b) Define Integration testing? Explain the integration testing strategies.	08
	c) Illustrate the testing strategy for Web Apps. How SQL Inject Attack is performed on the web?	06

**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 - IV**

5	a) What is pattern? Explain the layers architecture patterns with an example.	<b>10</b>
	b) Design a Model-View-Controller (MVC) architecture pattern for web application and also provide CRC representation for the same.	<b>10</b>

## **OR**

6	a) List the Pattern Categories.	<b>05</b>
	b) Illustrate the architecture pattern used in the Java Spring.	<b>05</b>
	c) Describe the Pipes & Filters architecture pattern with an example.	<b>10</b>

## **UNIT - V**

7	a) Design a Publisher – Subscriber access control class diagram with a scenario of updation and notification.	<b>10</b>
	b) Explain the implementation and variants of proxy pattern.	<b>10</b>

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