



VIT

Vellore Institute of Technology

REG.NO.:

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

SLOT: A2+TA2+TAA2

Programme Name & Branch	: MCA	Maximum Marks: 50
Course Code and Course Name	: PAMCA505 - Software Engineering	
Faculty Name(s)	: Dr. Asis Kumar Tripathy, Dr. Priya M	
Class Number(s)	: 2667, 2661	
Date of Examination	: 27-01-2026	

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)

CO1- Compare traditional and agile software development processes

CO2- Document software requirements using UML and design principles

Q. No	Question	M	CO	BL
1.	Describe the major activities involved in the generic process framework used in software engineering, highlighting their roles and importance in the development of software systems with suitable examples.	10	1	1
2.	Critically analyse the Spiral Process Model in software engineering, emphasizing its risk-driven nature, phase structure, and applicability to complex and large-scale projects, with suitable examples.	10	1	4
3.	A start-up is developing a mobile banking application that must be highly secure, user-friendly, and adaptable to frequent customer feedback. The development team is small, works closely with the client, and releases updates every two weeks. As the project lead, which AGILE model will you choose to manage this project? Discuss pair programming, test-driven development, continuous integration, on-site customer involvement, refactoring, and handling changing requirements.	10	1	4
4.	Draw and describe a use case diagram for an online shopping system, clearly identifying the actors and their relationships with the system. Briefly explain the purpose and components of a Use Case Diagram.	10	2	6
5.	An online retail company processes customer orders through steps like validation, payment, inventory update, and notification. The company wants each step to be independent and easily modifiable. Which architecture style you prefer to design this system? Identify the main components and explain how data moves between them.	10	2	4

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REG.NO.:

SLOT: B2+TB2+TBB2

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

Programme Name & Branch	:MCA	
Course Code and Course Name	:PAMCA604 ,Cybersecurity	
Faculty Name(s)	:R.Mangayarkarasi	
Class Number(s)	: VL2025260502545	
Date of Examination	:28-01-2016	
Exam Duration	: 90 minutes	Maximum Marks: 50

General instruction(s):

Answer All Questions

M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)

CO1: Identify cyberattacks, vulnerabilities, and their classifications.

CO2 :Mitigate threats using countermeasures and security practices.

Q. No	Question	Module	Marks	CO	BL
1.	<p>Analyze the scenario and identify the type of cybercriminal involved.</p> <p>i)A college student breaks into a university website, defaces the homepage with their alias, and posts screenshots on social media to show off their skills. No financial damage is intended.</p> <p>ii)An IT employee receives a phone call from someone claiming to be a senior manager. Trusting the caller, the employee shares login credentials, which are later used to access confidential systems.</p> <p>iii)A group hacks a government website and replaces its content with political messages opposing a newly introduced law.</p> <p>iv)A terrorist organization launches a coordinated cyberattack to disrupt airport communication systems to create fear and instability.</p> <p>v)An attacker secretly installs malware on victims' computers to spy on their private activities without seeking publicity or financial gain.</p> <p>vi)A hacking group steals proprietary product designs from a multinational company and sells them to competitors for profit.</p> <p>vii)A foreign government launches a silent cyberattack to steal defense data from another country without being detected.</p> <p>viii)A well-organized cybercrime syndicate runs ransomware campaigns targeting hospitals and demands payment in cryptocurrency</p> <p>ix)A former employee, angry after being fired, uses still-active credentials to delete important company data.</p> <p>x)A competing company bribes an employee to copy customer</p>	1	10	CO1	BL4



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CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

	databases and confidential pricing strategies.				
2	a) How do you think cybercrime has relevance in the extended enterprise context? Explain.	1	5	CO1	BL2
	b) Explain the role of the Information Technology Act, 2000 in addressing cybercrimes in India. Highlight key offences and punishments and comment on the effectiveness of law enforcement initiatives.		5		
3.	Analyze how cybercriminals plan and execute attacks on an organization by explaining the roles of reconnaissance, scanning, and attack phases. Illustrate your answer by distinguishing between passive and active attacks and by referring to the tools commonly used in each phase.	1	10	CO1	BL4
4.	Discuss the possible attacks on Mobile/cell phones along with the counter measures in details.	2	10	CO2	BL2
5.	a) What are the "mobility types"? Quote day-to-day examples of your familiarity that relates to them b) Cloud environments introduce several challenges in Identity and Access Management (IAM). Analyse how IAM standards such as SAML and SPML address two major cloud IAM challenges:	2	10	CO2	BL4



Slot : C2+TC2

School of Computer Science Engineering and Information Systems

Winter Semester 2025-2026

Continuous Assessment Test - I

Programme Name & Branch : MCA

Course Name & Code: System Design – PAMCA608

Class Number (s): VL2025260504756, VL2025260504687

Faculty Name (s): Prof. Jaganathan, Prof. Senthil Murugan B

Exam Duration: 90 Min.

General instruction(s):

Maximum Marks: 50

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- **Course Outcomes:**

CO1: Recognize the key principles of system design with focus on non-functional requirements

Q.No.	Question	M	CO	BL
1.	In a large-scale social media platform where millions of likes, comments, and post updates are generated per minute, fast response time is essential while minor delays in updating engagement metrics are acceptable. Propose an appropriate data update strategy by justifying the use of synchronous or asynchronous updates. Elaborate how caching and background processing enhance scalability and performance, and discuss one potential risk of this approach along with a suitable mitigation technique.	10	CO1	BL3
2.	Define Non-Functional Requirements (NFRs). Using an online banking system as an example, discuss how performance, security, usability, and availability NFRs influence system design and behaviour.	10	CO1	BL1
3.	A business runs a platform for social interaction and real-time internet video streaming where users anticipate: <ul style="list-style-type: none"> • Videos to begin playing fast • Very little buffering while playing • High availability during live events and peak hours The platform provider enters into a contract with enterprise clients and content partners that ensure specific service performance and dependability standards. The engineering team continually assesses system performance, establishes internal performance goals, and contrasts actual metrics with contractual obligations to make sure these promises are	10	CO1	BL3



Slot : C2+TC2

School of Computer Science Engineering and Information Systems
Winter Semester 2025-2026
Continuous Assessment Test – I

Programme Name & Branch : MCA

Course Name & Code: System Design – PAMCA608

Class Number (s): VL2025260504756, VL2025260504687

Faculty Name (s): Prof. Jaganathan, Prof. Senthil Murugan B

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- **Course Outcomes:**
CO1: Recognize the key principles of system design with focus on non-functional requirements

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	<p>fulfilled.</p> <p>Define Service Level Agreement (SLA), Service Level Objective (SLO), and Service Level Indicator (SLI) in the context of this real-time platform. In this case, clearly state what would be a SLA, a SLO, and a SLI, and describe how they connect to one another.</p>			
4.	<p>A large number of people use YouTube to publish videos, watch content, leave comments, and instantly update the number of views and likes.</p> <p>To guarantee availability and fault tolerance, uploaded movies and metadata are duplicated across several datacenters.</p> <p>While some processes, like 'likes and view counts', can wait a little bit, others, like video uploads and channel changes, need to be highly consistent.</p> <p>Three replication mechanisms are taken into consideration by YouTube: Asynchronous, Semi-Synchronous, and Synchronous.</p> <p>Using the YouTube scenario, explain synchronous, asynchronous, and semi-synchronous replication, and identify which operations perform best under each strategy and why.</p>	10	CO1	BL3
5.	<p>In order to extend horizontally, a sizable online ticket booking company divides its database by route ID.</p> <p>A few well-known routes see incredibly high booking and search traffic during festival seasons, whereas the majority of routes see very little activity.</p> <p>Hot partitions, higher latency, and inconsistent server load are the results of this.</p> <p>Using this case analyze skewed workloads and hotspots in data partitioning, also describe two techniques to relieve hotspots with suitable examples.</p>	10	CO1	BL3



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SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

SLOT: D2+TD2

Programme Name & Branch	: MCA
Course Code and Course Name	: PAMCA506 & Full Stack Web Development
Faculty Name(s)	: Prof. Sumangali K, Prof. A. Vijayarani
Class Number(s)	: VL2025260502621, VL2025260502629
Date of Examination	: 30-01-2026
Exam Duration	: 90 minutes
	Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes
 1. Design responsive web pages using HTML, CSS, and JavaScript.
 2. Develop frontend interfaces using ReactJS.

Q. No	Question					M	CO	BL																																				
1.	A retail management system needs to present product sales information in a visually organized and interactive format. As part of the user interface development, you are required to dynamically generate and style a following table using HTML, CSS JavaScript and DOM manipulation.					1		3																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Product Name</th> <th>Price</th> <th>Category</th> <th>Quantity</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>Pen</td> <td>Rs.20</td> <td>Stationery</td> <td>10</td> <td>Rs. 200</td> </tr> <tr> <td>Pencil</td> <td>Rs. 5</td> <td>Stationery</td> <td>20</td> <td>Rs. 100</td> </tr> <tr> <td>Sketch</td> <td>Rs.50</td> <td>Drawing Tool</td> <td>10</td> <td>Rs. 500</td> </tr> <tr> <td>Crayons</td> <td>Rs. 30</td> <td>Coloring Tool</td> <td>10</td> <td>Rs. 300</td> </tr> <tr> <td colspan="4"></td><td>Rs. 1100</td></tr> <tr> <td colspan="5" style="text-align: center;">Total</td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p>i) Place them in a neatly arranged table with their Product Name, Price, Category, Quantity, and Cost.</p> <p>ii) The final output table must be neatly formatted such that: The Product Name column is left-aligned. All remaining columns (Price, Category, Quantity, Cost) are center-aligned.</p> <p>iii) Apply conditional row styling using DOM and CSS: Odd-numbered rows should be displayed with a light pink background color. Even-numbered rows should be displayed with a blue background color.</p> <p>iv) Implement interactive UI behavior using DOM event handling: When the</p>	Product Name	Price	Category	Quantity	Cost	Pen	Rs.20	Stationery	10	Rs. 200	Pencil	Rs. 5	Stationery	20	Rs. 100	Sketch	Rs.50	Drawing Tool	10	Rs. 500	Crayons	Rs. 30	Coloring Tool	10	Rs. 300					Rs. 1100	Total												
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WINTER SEMESTER 2025-2026

SLOT: D2+TD2

	mouse pointer moves over any individual table cell, the cell's content should: Change to bold font, Change text color to brown. When the mouse pointer moves out, the cell should return to its original style.			
2.	<p>Create a website containing information about your company's product and implement the following requirements for each page using appropriate syntax:</p> <p>→ Page 1: The entire page's text should be centered and the font size for all text should be set to 14px.</p> <p>i) Page 2: Contains three paragraphs with the following styles: Paragraph 1: Text should be green and centered. Paragraph 2: Font size should be 200px with an aqua-colored background. Paragraph 3: Should combine the styles of both Paragraph 1 and Paragraph 2.</p> <p>→ iii) Responsive Layout for All Pages: Implement a responsive layout where the number of columns adjusts based on screen width: On small screens, display 1 column. On medium screens, display 2 columns. On large screens, display 3 columns. Each layout item should have a margin of 10px.</p>	10	1	3
3.	<p>Design a Student Registration Form using HTML and JavaScript to collect the Student details such as: Student Name, Register Number, Date of Birth, Programme, Email ID, Permanent Address, Temporary Address, Phone Number. Implement JavaScript (DOM-based) validation to satisfy the following conditions:</p> <p>→ i) Mobile number must contain exactly 10 digits. ii) Register number must contain only alphabets and numbers and should not exceed 9 characters Eg: 26MIS0032. iii) Student name must contain only alphabets and should not exceed 30 characters. iv) Validate the email ID for correct format. v) Provide a checkbox labeled "Permanent address is same as Temporary address": <ul style="list-style-type: none"> If checked, copy the permanent address into the temporary address field and make it non-editable. If unchecked, allow the temporary address field to be editable. vi) On successful validation, display all submitted form details in an alert box.</p>	10	1	3
4.	<p>A software company is developing a social media feed application where users can view posts, like/comment in real-time, add new posts without page refresh, and filter posts by category or user.</p> <p>The team is evaluating two approaches for updating the page content: using traditional JavaScript DOM methods or using React DOM, which leverages components, state management, and JSX to efficiently render and update the user interface.</p> <p>a) Compare React DOM vs JavaScript DOM in this scenario. b) List the advantages of React DOM for dynamic and complex UI. c) Explain how React DOM updates the UI when a user likes a post.</p>	10	2	2
5.	A grocery store requires a lightweight web application to showcase its	10	2	3



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CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

SLOT: D2+TD2

inventory. As a Front-End Developer, you are tasked with building a dynamic React functional component that allows users to view and filter products.

- i) Create a React functional component named GroceryApp. Define a static list of grocery items, where each object contains: id, name, price, and category.
- ii) Use JSX to render this list dynamically in a user-friendly layout. Apply basic CSS styling (inline or external) to ensure the interface is clean and readable.
- iii) Utilize the useState hook to manage the grocery data. Provide an "Add to Cart" button for every item. When clicked, trigger an alert() displaying the name of the selected product.



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SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

SLOT: E2 + TE2

Programme Name & Branch : Master of Computer Applications
 Course Code and Course Name : PAMCA504 - Machine Learning
 Faculty Name(s) : Dr. PARIMALA M, Dr. RAMKUMAR T
 Class Number(s) : VL2025260502644, VL2025260502647
 Date of Examination : 31-01-2026
 Exam Duration : 90 minutes

General instructions:

Maximum Marks: 50

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes :

CO1: Demonstrate core principles of machine learning algorithms

CO2 : Classify data using supervised and unsupervised algorithms

Q. No	Question							M	CO	BL																																																	
1.	With suitable justification, discuss how Supervised, and Unsupervised Machine Learning differ in terms of: (i) learning policy (ii) representation of learned models (iii) algorithms adopted, and (iv) practical applications.							10	CO1	BL2																																																	
2.	The following set of training examples are used to learn the concept of "Japanese Economy Car". The independent features are Country of origin, Manufacturer, Color, Decade, and Type. The dependent variable is Example Type, which is used to discriminate positive and negative samples. Apply candidate-elimination algorithm and computes the version space that are consistent with an observed sequence of training examples.							10	CO1	BL3																																																	
	<table border="1"> <thead> <tr> <th>Instance</th><th>Country of origin</th><th>Manufacturer</th><th>Color</th><th>Decade</th><th>Type</th><th>Example Type</th></tr> </thead> <tbody> <tr> <td>X₁</td><td>Japan</td><td>Honda</td><td>Blue</td><td>1980</td><td>Economy</td><td>Positive</td></tr> <tr> <td>X₂</td><td>Japan</td><td>Toyota</td><td>Green</td><td>1970</td><td>Sports</td><td>Negative</td></tr> <tr> <td>X₃</td><td>Japan</td><td>Toyota</td><td>Blue</td><td>1990</td><td>Economy</td><td>Positive</td></tr> <tr> <td>X₄</td><td>USA</td><td>Chrysler</td><td>Red</td><td>1980</td><td>Economy</td><td>Negative</td></tr> <tr> <td>X₅</td><td>Japan</td><td>Honda</td><td>White</td><td>1980</td><td>Economy</td><td>Positive</td></tr> <tr> <td>X₆</td><td>Japan</td><td>Toyota</td><td>Green</td><td>1980</td><td>Economy</td><td>Positive</td></tr> </tbody> </table>							Instance	Country of origin	Manufacturer	Color	Decade	Type	Example Type	X ₁	Japan	Honda	Blue	1980	Economy	Positive	X ₂	Japan	Toyota	Green	1970	Sports	Negative	X ₃	Japan	Toyota	Blue	1990	Economy	Positive	X ₄	USA	Chrysler	Red	1980	Economy	Negative	X ₅	Japan	Honda	White	1980	Economy	Positive	X ₆	Japan	Toyota	Green	1980	Economy	Positive			
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3.a)	"VC dimension plays a crucial role in determining the generalization ability of a learning algorithm" – Discuss the intuitive idea behind the statement with sufficient examples.							5	CO1	BL3																																																	
b)	A hypothesis class H has VC dimension of 10. Determine the minimum number of samples required to learn the notion of Probably Approximately correct Learning (PAC) with the error rate $\epsilon = 0.05$, and the confidence $1 - \delta = 0.95$.							5	CO1	BL3																																																	



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WINTER SEMESTER 2025-2026

SLOT: E2 + TE2

4. An Insurance company uses the following dataset to understand how a driver's experience affects their monthly premium. Calculate the Simple Linear Regression equation of Y on X, and determine the type of relationship between the variables by plotting a scatter diagram.

Driver Experience (In Years)	Premium (in dollars)
5	64
2	87
12	50
9	71
15	44
6	56
25	42
16	60

5. You have observed the car stolen of 10 different weekends. On each of these weekend you have noted the car colour (Red, or Yellow), car type (Sports or SUV), and origin of the car (Domestic or Imported). You have built the following data table

S.No.	Colour	Type	Origin	Car_Stolen
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

Using the Naïve Bayes classifier, predict the possibility of "Car_Stolen" for the given test sample, and calculate the probability also.

X_Test = (Color = Red, Type = SUV, Origin = Domestic)