

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004****Department of Computer science and engineering****CSE 6<sup>th</sup> Semester****CONTINUOUS ASSESSMENT TEST - 2 Date: 24<sup>th</sup> Feb 2025****[19Z601] - Machine Learning****Time: 1 Hour 30 minutes.****Maximum Marks: 50****INSTRUCTIONS:**

1. Answer ALL questions. Each Question carries 25 Marks.
2. In each question, subdivision a carries total of 5 marks ( one mark for each question), subdivisions b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks each.
3. Course Outcome Table : Q1: CO 3 and Q2: CO 2

**(5x 1 mark = 5 marks)****1. a .**

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. Artificial neural network with single layer can solve  
 A) No problems B) Linearly separable problems C) Non linearly separable problems D) Any problem
- ii. A bias is used to  
 A) Shift activation function B) Shift input values C) Determine whether output is large enough to activate it D) All of the above
- iii. When each Basis function depends only on the Radial distance from a center with coefficients found by least squares it is called  
 A) Co-efficient function B) Distance function C) Least Squares function D) Radial Basis function

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

- iv. Which technique is called Maximum Margin Classifier? SVM 
- v. Instead of computing the coordinates of all data in the feature space, only computing the inner product between the images of all pairs of data in the feature space is called ~~Kernel~~ Kernel trick

**b.****(2 x 5 marks = 10 marks)**

- i. Describe the Error Back propagation technique.
- ii. Describe how Convolutional Neural Networks handle Regularization (model invariance to transformations of input).

- c. Design an Artificial Neural network (ANN) that can identify Exclusive OR function. You need to specify the weight values the activation function and the output function . Extend this ANN to identify cases where the two colors that are input are either blue or green but not both blue nor both green nor both red nor red and green nor red and blue (there are three colors as input) **(1x 10 marks = 10 marks)**

(5 x 1 mark = 5 marks)

2. a

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. Maximum Likelihood involves  
A) Many attributes  B) Independent events C) Few attributes D) Independent attributes
- ii. When Bias increases the Variance  
A) Increases  B) Decreases C) Randomly behaves D) Does not change
- iii. L1 regularization adds to the loss function the  
A) Value of coefficients B) Squared value of coefficients C) Negative value of coefficients D) Reciprocal of coefficients

Write the answer for the following. Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

iv. Bayes theorem is  $P(A|B) = \frac{P(B|A)P(A)}{P(B)}$

v. Fishers Linear discriminant gives large separation between cl, \_\_\_\_\_ and \_\_\_\_\_

b.

(2 x 5 marks = 10 marks)

- i. Compare Bayesian linear regression with Maximum Likelihood Estimation
- ii. State the five problems that Linear regression solutions have to overcome

c.

- i) Describe how Bayesian model comparison is used to identify the correct model and avoid overfitting. (5)
- ii) Describe Fishers Linear Discriminant approach for multiple classes (5)

(1x 10 marks = 10 marks)

(1 x 10 marks = 10 marks)

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**

**Department of CSE**

**BE(CSE) – VI semester**

**CONTINUOUS ASSESSMENT TEST 2 Date: 24/02/2025**

**19Z602 - Compiler Design**

**Time: 1 Hour 30 minutes.**

**Maximum Marks: 50**

**INSTRUCTIONS:**

1. Answer ALL questions. Each Question carries 25 Marks.
  2. In each question, subdivision a carries total of 5 marks ( one mark for each question), subdivisions b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks each.
  3. Course Outcome Table :
- |       |      |      |      |
|-------|------|------|------|
| Qn. 1 | CO 3 | Qn.2 | CO 4 |
|-------|------|------|------|

**1. a.**

**(5 x 1 mark = 5 marks)**

**Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.**

i. Assume that the SLR parser for a grammar G has  $n_1$  states and the LALR parser for G has  $n_2$  states. Analyze the relationship between  $n_1$  and  $n_2$ . Context-free grammar specifies syntax rules

- A)  $n_1$  is necessarily less than  $n_2$       B)  $n_1$  is necessarily equal to  $n_2$   
 C)  $n_1$  is necessarily greater than  $n_2$       D) There is no relationship between  $n_1$  and  $n_2$       [L2]

ii. S1: Canonical LR parser is LR (1) parser with single look ahead terminal.

S2: All LR(K) parsers with  $K > 1$  can be transformed into LR(1) parsers.

- A) S1 is True and S2 is False      B) S1 is False and S2 is False  
 C) S1 is True and S2 is True      D) S1 is False and S2 is True      [L2]

iii. \_\_\_\_\_ in YACC has state transitions of the generated parser

- A) y.tab.c      B) y.tab.h      C) y.output      D) yacc.tmp      [L1]

**Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.**

iv. Consider the following grammar, FIRST (D) is \_\_\_\_\_

$$S \rightarrow aBDh$$

$$B \rightarrow cC$$

$$C \rightarrow bC / \epsilon$$

$$D \rightarrow EF$$

$$E \rightarrow g / \epsilon$$

$$F \rightarrow f / \epsilon$$

[L2]

✓ If a state does not know whether it will make a shift operation or reduction for a terminal is called \_\_\_\_\_

[L1]

b.

**(2 x 5 marks = 10 marks)**

i. Construct a Predictive parser for the grammar

$$S \rightarrow aABb$$

$$A \rightarrow c \mid \epsilon$$

$$B \rightarrow d \mid \epsilon$$

Is the parser LL(1). Show the actions of the parser for the input string acdb

[L4]

ii. Construct a Recursive decent parser for the following grammar

$$\begin{aligned} S &\rightarrow a \mid T \\ T &\rightarrow TS \mid S \end{aligned}$$

[L4]

c. Construct the a Canonical LR parser table for the grammar given below

$$S \rightarrow AaBb|ac$$

$$A \rightarrow a$$

$$B \rightarrow a$$

Show the actions of the parser for the input string "abc"

[L5]

(1 x 10 marks = 10 marks)

(5 x 1 mark = 5 marks)

2. a.

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

i. Which of the statement is true about Syntax Directed Definitions (SDD)?

- A) CFG along with Semantic rules gives SDD
- B) Syntax Directed Definitions along with Semantic rules gives CFG
- C) Syntax Directed Definitions along with CFG gives Semantic rules
- D) Intermediate code along with Semantic rules

[L1]

ii. Which of the following is not true for postfix notation of intermediate codes?

- A) Compact storage
- B) Good for optimisation
- C) Ineffective target code generation
- D) Easy to generate postfix code

[L2]

iii. "Some code optimizations is carried out on intermediate code" – reason out

- A) Program analysis is more accurate on intermediate code than on machine code
- B) Information from dataflow analysis cannot otherwise be used for optimization
- C) Enhances the portability of the compiler to other target processors
- D) Information from the front end cannot otherwise be used for optimization

[L2]

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

iv. Postfix form of  $x=a < b ? a : b$  is \_\_\_\_\_

[L2]

v. The following grammar is \_\_\_\_\_ -attributed

$$\begin{aligned} S &\rightarrow T a \{ S.type = T.val \} \\ T &\rightarrow c \{ T.val = c \} \end{aligned}$$

[L1]

b. (2 x 5 marks = 10 marks)

i. Write the postfix and Abstract Syntax Tree of the following code fragment

```
if (a < 100 and a>0)
    z = p + q * 10;
else if ( a>100)
    z=p*q-10;
```

[L4]

ii. What are the implementations of Three address code? Explain all by considering the expression  $x=a + b * c / e + b * c$

[L4]

(1 x 10 marks = 10 marks)

c. Write the syntax directed definition for assignment statements. Write the three address code for the following assignment statement  $P = a * b + b * 20.5$  where  $a$ ,  $b$  and  $P$  are floating point numbers.

[L5]

## PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

Department of CSE

BE CSE G1 &amp; G2

CONTINUOUS ASSESSMENT TEST 2 Date: 25.02.2025

19Z603 - Distributed Computing

Time: 1 Hour 30 minutes.

Maximum Marks: 50

**INSTRUCTIONS:**

1. Answer **ALL** questions. Each Question carries 25 Marks.
2. In each question, subdivision **a** contains 5 questions and the weightage of each question is one mark, subdivision **b(i)** and **b(ii)** carries 5 marks each and subdivision **c** carries 10 marks each.
3. Subdivisions (a) and (b) will be with no choice and Subdivision (c) may be with choice but not in more than 1 question.
4. Course Outcome Table :      

Qn. 1	CO 3
-------	------

Qn.2	CO 4
------	------

**1. a**

(5 x 1 mark = 5 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. What is the primary reason for process migration in distributed systems? L1
  - a) To reduce network traffic
  - b) To improve system performance and resource utilization
  - c) To increase the number of processes
  - d) To prevent process failure
- ii. Which of the following is commonly used in load estimation policies to determine the load on a server? L2
  - a) Number of active users only
  - b) CPU usage, memory utilization, and network bandwidth
  - c) The geographical location of the server
  - d) The total number of servers in the system
- iii. Which of the following is a challenge associated with process transfer policies in load sharing? L2
  - a) Ensuring uniformity in task execution across all servers
  - b) Ensuring that each server performs the same number of tasks
  - c) Managing the migration overhead and ensuring minimal disruption to running processes
  - d) Simplifying the decision-making process for task allocation

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

- iv. -----assumes that the remaining service time is equal to the time used so far. L1
- v. ----- is the priority assignment policy, Wherein the number of local processes is greater or equal to the number of remote processes, local processes are given higher priority than remote processes. L2

(2 x 5 marks = 10 marks)

b.

- i. When examining load balancing algorithms, it's important to understand how they are categorized based on their functionality, implementation methods, and performance characteristics. Explore the different types of load balancing algorithms and their classifications. L3

- ii. What are the reasons behind the necessity of process migration? Analyze the following critical activities involved in the process migration:

- a. Transferring the process's address space  
b. Freezing and restarting the process

L4

c.

(1 x 10 marks = 10 marks)

Imagine you need to design a centralized load sharing algorithm for global job scheduling in a distributed system to ensure its effectiveness and scalability. Evaluate the issues associated with implementing this load sharing approach. L5

2. a

(5 x 1 mark = 5 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. In the private cloud deployment model, which of the following is true? L2

- a) The infrastructure is shared by multiple organizations and is publicly available  
b) The organization owns and manages the infrastructure, providing services only to its employees  
c) It offers shared infrastructure on a pay-per-use basis  
d) It is fully managed by a third-party service provider for multiple tenants

- ii. What is a key advantage of the community cloud deployment model? L2

- a) It is designed for use by a specific group of organizations that share common interests, such as security or regulatory compliance  
b) It allows the general public to access the cloud infrastructure  
c) It offers a mix of public and private cloud resources for scalability  
d) It reduces the cost of managing private infrastructure by relying solely on third-party providers

- iii. Which of the following is a potential security concern in cloud computing?
- a. Data redundancy
  - b. Vendor lock-in
  - c. Elasticity
  - d. Unauthorized access

L1

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

- iv. The resources or services are temporarily leased for the time required and then released.  
This practice is also known as-----

L1

- v. The delivery model that is adopted by Red Hat OpenShift on IBM Cloud is -----

L2

b.

(2 x 5 marks = 10 marks)

- i. Explain about the deployment model that have the advantage of keeping the core business operations in-house by relying on the existing IT infrastructure and reducing the burden of maintaining it once the cloud has been set up.
- ii. TechStart is a growing startup focused on developing a mobile app that helps users track their fitness goals. The company plans to launch the app in a few months and needs a cloud solution to support both development and hosting. Which cloud delivery model would be most suitable for TechStart to scale its infrastructure quickly, handle varying workloads, and manage its databases effectively? Justify your answer.

L3

L4

c.

(1 x 10 marks = 10 marks)

- Illustrate the architecture of cloud computing environment with neat diagram. Elaborate the cloud reference model and justify that it provides runtime environment for applications and data processing platforms.

L5

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**

**Department of Computer Science and Engineering**

**B E CSE – Semester VI**

**CONTINUOUS ASSESSMENT TESTII Date: 25/02/2025**

**19Z604 - Embedded Systems**

**Time: 1 Hour 30 minutes.**

**Maximum Marks: 50**

**INSTRUCTIONS:**

1. Answer **ALL** questions. Each Question carries 25 Marks.
2. In each question, subdivision acarries a total of 5 marks ( one mark for each question), subdivisions b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks each.

3. Course Outcome Table

Qn.1	CO3
------	-----

On ?	CO4
------	-----

**a**

**(5 x 1 mark = 5 marks)**

i. Choose the valid components of UART.

A. Baud Rate Generator B. Register C. Control Logic D. Buffer

A) A  B) A and B C) A and C D) B, C and D

ii. Pick the TRUE statement(s) regarding SPI communication?

A. SPI stands for Serial Peripheral Interface.

B. It follows Serial Synchronous Communication.

C. It follows Serial Asynchronous Communication.

D. It supports Multiple Master - Slave Communication

iii. With respect to Hardware Handshaking in RS-232 protocol, arrange the set the operations in a way that it facilitates the process in a smooth fashion.

1. RST = HIGH (DTE)

2. CTS = H

IGH (DCE)

3. DTR = HIGH (DTE)

4. Data Transfer

5. All 3 pins to LOW

A) 3-1-2-4-5 B) 2-1-3-4-5 C) 1-2-3-4-5 D) 1-2-4-3-5

iv. In I2C, clock stretching technique is used by the slave device to respond when it operates slower than the master's clock

v. Ring indicator pin in DB9 connector, is unused for RS232 communication ? (Name the pin)

**b.**

**(2 x 5 marks = 10 marks)**

i. State the advantages of RS-485 over RS-232 interface ? and discuss the pros and cons of SPI over I2C ?

ii. With the help of timing diagram explain the data transfer on I2C bus for a 7-bit addressing?

**(1 x 10 marks = 10 marks)**

c. An embedded system has to obtain data from 20 sensors and convert the signals to digital format and the digital data is to be transmitted to a PC for an analysis. Suggest a suitable communication link between the embedded system and the sensors, embedded system and the PC. Draw the block diagram and provide a high-level design to implement this system.

(5 x 1 mark = 5 marks)

2.a

i. Match the following examples to types of tasks?

- a. fire handling task in industry; b. emergency message arrival in system; c. keyboard or mouse movements

- A) a - periodic task b - sporadic task c - aperiodic task  
B) a - aperiodic task b - sporadic task c - periodic task  
C) a - sporadic task b - aperiodic task c - aperiodic task  
D) a - sporadic task b - sporadic task c - aperiodic task

ii. Transient overload denotes the overload of a system for a very short time. Which algorithm suffers the most from transient overload conditions?

- A) EDF    B) RMA    C) DMA    D) Round-robin

iii. State whether the following statement is True or False. In a non-preemptive event-driven task scheduler, scheduling decisions are made only at the arrival and completion of tasks.

True

iv. For the following set of tasks scheduled using Table-driven scheduler, the size of the table (no of rows) is 110.

T1 = (e1 = 24 msecs, p1 = 24 msecs), T2 = (e2 = 48 msecs, p2 = 48 msecs), T3 = (e3 = 60 msecs, p3 = 60 msecs)

v. Choose the valid characteristics of any embedded system.

A) Embedded System is confined to perform a specific task.

B) Embedded Systems do not have any deadline.

C) Embedded Systems can work only in optimal environmental conditions.

D) Embedded Systems must be reliable.

b.

(2 x 5 marks = 10 marks)

Consider a car control system which contains the tasks for Speed Measurement, ABS control and Fuel Injection. (Note: e, p, d denotes the worst case execution time, periodicity and deadline respectively). (Common data for b i& ii)

Task	e (mSec)	p (mSec)	d (mSec)
Speed Measurement	4	20	20
ABS control	10	40	40
Fuel Injection	40	80	80

40 not feasible  
so divide tasks  
into smaller consider  
10 and other feasible

i) Suppose a cyclic scheduler is to be used to schedule the car control system task set. What is the major cycle of the task set? Suggest a suitable frame size and provide a feasible schedule for the task set

ii) Determine whether the car control system tasks are schedulable on a uniprocessor using EDF algorithm. Provide a feasible schedule for one major cycle using the time line chart.

c. Explain the operation of Priority Inheritance Protocol to resolve priority inversion? Highlight the issues of Priority Inheritance Protocol when sharing critical resources among real time tasks using examples? Show how Priority Ceiling Protocol overcomes those drawbacks?

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**

**Department of CSE**

**B.E CSE & 6<sup>th</sup> Semester**

**CONTINUOUS ASSESSMENT TEST 2 Date: 26.02.2025**

**19Z034-Wireless LAN**

**Time: 1 Hour 30 minutes.**

**Maximum Marks: 50**

**INSTRUCTIONS:**

1. Answer **ALL** questions. Each Question carries 25 Marks.
2. In each question, subdivision **a** carries total of 5 marks (one mark for each question), subdivisions **b(i)** and **b(ii)** carries 5 marks each and subdivision **c** carries 10 marks each.
3. Course Outcome Table : 

Qn. 1	CO3
-------	-----

Qn.2	CO5
------	-----

**1. a**

**(5 x 1 mark = 5 marks)**

- i. In the 4-way handshake, what is the purpose of step 3  
 A) Access Point (AP) sends encryption key to Station (STA) for secure communication  
B) Station (STA) sends confirmation messages to Access Point (AP)  
C) Station (STA) sends authentication message to Access Point (AP)  
D) Access Point (AP) sends confirmation message to Station (STA) for secure communication
- ii. IEEE 802.1X Standard supports  
A) Wireless networks  
 C) Both Wireless and Wired Networks  
B) Wired Networks  
D) Wi-Fi Networks only
- iii. Which frames inform the station about the security support available at the AP in Wi-Fi network?  
 A) Management Frame: Beacon  
B) Control Frame: RTS  
C) Management Frame: Association  
D) Control Frame: CTS
- iv. Successful association results in user getting association ID from the Access Point.
- v. Traditional rogue AP Man-in-the-Middle (MitM) attacks will not be successful if PMF is enabled in Wi-Fi network.

**b.**

**(2 x 5 marks = 10 marks)**

- i. Compare and contrast between WEP, WAP, WAP2 and WEP3 security protocols.
- ii. Given a corporate office with multiple floors, how would you setup a reliable and scalable backbone network for seamless Wi-Fi roaming across the entire building, ensuring high availability and redundancy in case of hardware failure?

**c.**

**(1 x 10 marks = 10 marks)**

- (i) How does Mobile IP handle the challenges of maintaining seamless connectivity during Layer 3 roaming across different Wi-Fi access points, and what impact does this have on latency-sensitive applications like VoIP and video conferencing?  
(Or)
- (ii) Illustrate Multichannel Man-in-the-Middle (MitM) attacks in Wi-Fi Network. How would a Wi-Fi network administrator use network monitoring, encryption, and access control techniques to create a multi-layered protection plan that would stop MitM attacks?

(5 x 1 mark = 5 marks)

multiple

2. a

i. Which technology is used by Wi-Fi 6 to enable simultaneous communication with multiple devices on the same channel?

- A) MIMO  
C) WPA3

- ~~B) OFDMA~~  
D) BSS Coloring

ii. Which of the following is a feature unique to Wi-Fi 6E, enabled by the 6 GHz band?

- A) 1024-QAM modulation  
~~B) 160 MHz and 320 MHz channels~~  
C) BSS Coloring  
D) WPA3 security

iii. Match the following

- |            |                              |
|------------|------------------------------|
| a) Wi-Fi 4 | - i) MLO                     |
| b) Wi-Fi 5 | - ii) Max.600 Mbps           |
| c) Wi-Fi 6 | - iii) BSS Coloring          |
| d) Wi-Fi 7 | - iv) 20, 40, 80 and 160 MHZ |

- A) a-i, b-iv, c-iii, d-ii  
C) a-iv, b-ii, c-iii, d-i

~~B) a-ii, b-iv, c-iii, d-i~~

D) a-ii, b-iii, c-iv, d-i

iv. ~~ab(51)~~ the maximum theoretical data rate that Wi-Fi 7 can achieve using 320 MHz channels and 4096-QAM.

v. ~~TWT~~ is a feature of Wi-Fi 6 that contributes to improved battery life for connected devices.

b.

(2 x 5 marks = 10 marks)

- i. Discuss the advantages of Wi-Fi 7 over Wi-Fi 6 Network.  
ii. Given a campus network with multiple access points operating on the same channel, how would you apply BSS Coloring to optimize channel utilization and improve throughput for clients in dense areas like lecture halls or cafeterias?

c.

(1 x 10 marks = 10 marks)

In order to improve network speed, scalability, and security while causing the least amount of disturbance to current business operations and legacy devices, how would you incorporate Wi-Fi 6 into an already-existing enterprise network infrastructure?

## PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

Department of Computer Science and Engineering

B.E CSE, <sup>6</sup>th Semester

CONTINUOUS ASSESSMENT TEST 2 Date: 26.02.2025

19Z027-XML and Web Services

Time: 1 Hour 30 minutes.

Maximum Marks: 50

## INSTRUCTIONS:

1. Answer ALL questions. Each Question carries 25 Marks.
2. In each question, subdivision a contains 5 questions and the weightage of each question is one mark, subdivision b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks each.
3. Subdivisions (a) and (b) will be with no choice and Subdivision (c) may be with choice but not in more than 1 question.
4. Course Outcome Table: 

Qn. 1	CO3
Qn.2	CO4

1. a

(5 x 1 mark = 5 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. \_\_\_\_\_ uses Interoperable Object References for endpoint naming. [L1]  
 A) CORBA  
 B) COM  
 C) DCOM  
 D) ORPC
- ii. \_\_\_\_\_ rules describe how web services interact over time. [L2]  
 A) Information  
 B) Sequencing  
 C) Service Providers  
 D) Associations
- iii. Identify the protocol used in e-mail. [L1]  
 A) SMTP  
 B) POP  
 C) FTP  
 D) IIOP

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

- iv. A \_\_\_\_\_ is encapsulated code, which means that the implementation of each component is hidden from outside the component. [L2]
- v. All Web Services are described using a standard XML notation called its WSDL [L1]

(2 x 5 marks = 10 marks)

b.

i. Propose a model for integrating web services. [L3]

ii. Design a web service technology stack and explain various components of it. [L4]

(1 x 10 marks = 10 marks)

c. Propose a framework for securing web Services by formulating a collaborative security standard among prevailing WS-\* security standards [L5]

2. a

(5 x 1 mark = 5 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

i. Identify the TRUE statement [L1]

A) SOAP is built with open technologies and open specification

B) SOAP is not a text-based protocol

C) SOAP is a tightly coupled protocol

D) SOAP does not work quite well in messaging as well as RPC architectures

ii. The \_\_\_\_\_ method sends its parameters in the URL and is typically used to request Web pages from a Web Server. [L2]

A) GET

B) PUT

C) POST

D) DELETE

iii. \_\_\_\_\_ is a mature protocol that was developed to support the connectionless, stateless world of web pages. [L1]

A) HTTP

B) SOAP

C) WSDL

D) POP

Write the answer for the following Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

iv. The \_\_\_\_\_ is an XML-based messaging and remote procedure call (RPC) specification that enables the exchange of information among distributed systems. [L2]

v. \_\_\_\_\_ relies on globally unique identifier (GUIDs), which are URNs that uniquely identify the resources in each registry. [L1]

b.

(2 x 5 marks = 10 marks)

i. Analyze the four core types of information in a UDDI registry with a neat diagram. [L3]

ii. List the various steps involved in publishing and finding WSDL descriptions in a UDDI Registry. [L4]

c.

(1 x 10 marks = 10 marks)

Elaborate on Simple Object Access Protocol with neat illustrations. Also propose a new web service protocol that could overcome the drawback of SOAP. [L5]

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004****Department of Computer science and engineering****CSE 6<sup>th</sup> Semester****CONTINUOUS ASSESSMENT TEST - 3 Date: 15<sup>th</sup> Apr 2024****[19Z601] - Machine Learning****Time: 1 Hour 30 minutes.****Maximum Marks: 35****INSTRUCTIONS:**

1. Answer ALL questions. Each Question carries 25 Marks.
2. Question No. 1 carries 8 Marks and question No. 2 carries 27 Marks
3. In question No. 1, subdivision a carries total of 8 marks (one mark for each question).
4. In question No. 2, subdivision a carries total of 7 marks (one mark for each question), subdivisions b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks.
5. Course Outcome Table : Q1: CO 1-4 and Q2: CO 5

**1. a .****(8x 1 mark = 8 marks)**

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. Candidate elimination algorithm uses  
A) Only positive examples B) No examples C) Both positive and negative examples D) Only negative examples
- ii. Gradient Descent is used to correct  
A) Weight values B) Activation function C) Threshold values D) All of the above
- iii. 'Bias' and 'Variance' are  
A) Equal B) Opposite C) Unconnected D) Proportional to each other
- iv. Fishers Linear discriminant  
A) minimizes separation between classes and also compacts a class B) maximizes separation between classes and also compacts a class C) maximizes separation between classes and maximizes the class D) minimizes separation between classes and maximizes the class
- v. Naive Bayes requires independence between \_\_\_\_\_
- vi. Bayesian Belief network requires independence between \_\_\_\_\_
- vii. Regularization in Neural Networks is used to handle \_\_\_\_\_
- viii. Information gain is used in \_\_\_\_\_ Learning

**2. a****(7 x 1 mark = 7 marks)**

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. Two major activities performed in Reinforcement learning are  
A) Deduce and Infer B) Exploit and Reuse C) Explore and Exploit D) Explore and Deduce
- ii. In Reinforcement learning, 'Rewards' are discounted based on  
A) Defect in task B) Time of occurrence C) Effort of the task D) Frequency of occurrence

iii. Reinforcement learning differs from other learning because, in Reinforcement learning because  
A) Policy has to be learned B) Feedback is delayed C) Actions are non-deterministic D) All of the above

iv. "n step" time difference is used in  
A) Temporary values B) Q learning C) Temporal difference learning D) N learning

Write the answer for the following. Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

v. Markov Decision process assumes that a \_\_\_\_\_ of \_\_\_\_\_ states, represents all previous states

vi. Three approaches used by Reinforcement learning to handle delayed feedback are a) \_\_\_\_\_ rewards, b) \_\_\_\_\_ horizon and c) \_\_\_\_\_ over rewards

vii. \_\_\_\_\_ assignment is the major problem for reinforcement learning approaches

b.

(2 x 5 marks = 10 marks)

- i. What is the primary differentiation between Reinforcement learning situation with other Learning situations? Describe the Markov decision process used in Reinforcement learning.
- ii. Differentiate the learning of the Value Function and the Policy, in the context of Reinforcement learning. Describe how the Value function can be learned even though there are no training examples of the form  $\langle s, a \rangle$ . Show how this can be used to learn the better Policy.

c.

(1 x 10 marks = 10 marks)

- i. Highlight the advantage of Q learning over other Reinforcement learning approaches. Describe the algorithm and training rule for Q -learning. How can Q-learning be used for non-deterministic worlds. Show convergence for Q- learning in a deterministic world.

(OR)

- ii. What is Temporal Difference Learning? Describe how this approach can be beneficial over Q learning? Demonstrate with an example.

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**  
**Department of Computer Science and Engineering**  
**B E CSE – Semester VI**  
**CONTINUOUS ASSESSMENT TEST III Date: 16/04/2025**  
**19Z604 - Embedded Systems**

Time: 1 Hour 15 minutes.

Maximum Marks: 35

**INSTRUCTIONS:**

1. Answer **ALL** questions.
2. In each question, subdivision a carries a total of 15 marks ( one mark for each question), subdivisions b(i) and b(ii) carries 5 marks each and subdivision c carries 10 marks.

--	--

On 2	
------	--

1. (15 x 1 mark = 15 marks)
- i. A set of periodic tasks has fixed priorities and total CPU utilization exceeding the Liu & Layland bound. However, initial analysis suggests that each task may still meet its deadline. Which of the following is the **most appropriate method** to determine the schedulability of these tasks?
- A. Discard the task set, since it violates the Liu & Layland bound  
B. Apply Earliest Deadline First (EDF), as it guarantees schedulability up to 100% utilization  
C. Use Lehoczky's response time analysis to compute the exact worst-case response times for each task  
D. Apply DMA, as it handles arbitrary deadlines better than RMA and guarantees schedulability
- ii. In which of the following scenarios is **Rate Monotonic Analysis (RMA)** preferred over **Earliest Deadline First (EDF)** scheduling?
- A. When tasks have varying deadlines and maximum CPU utilization is required  
B. When system predictability and low runtime overhead with fixed priorities are more important than maximum utilization  
C. When dynamic priority scheduling is supported by the real-time operating system  
D. When tasks have sporadic arrival patterns and deadlines less than their periods
- iii. Pick the **FALSE** statement from the following:
- A. UART communication is typically asynchronous  
B. I2C requires separate lines for data and clock signals  
C. SPI supports multiple masters without requiring arbitration  
D. RS485 is used for long-distance communication and supports differential signaling
- iv. In I2C, a start condition is denoted by ?
- A) SDA - low to high; SCL – low B) SDA - high to low; SCL - low C) SDA - low to high; SCL - high D) SDA - high to low; SCL - high
- v. Which of the following is **not** a typical challenge when programming for embedded devices?
- I. Limited computational power  
II. Lack of real-time capabilities  
III. Limited support for hardware-specific communication protocols  
IV. Large-scale memory management  
A. I, II, III only      B. I, II, III, IV      C. II, III, IV only      D. I and IV only
- vi. You are tasked with designing an embedded system for a smart thermostat. The system can either use a dedicated microcontroller to handle all tasks, which is energy-efficient but more costly, or use a general-purpose processor, which is cheaper but consumes more power

At which phase of the development lifecycle would you decide which option to pursue the thermostat design?

- A. Requirements Analysis
- B. Hardware/Software Partitioning
- C. Product Specification
- D. Hardware Software Integration

vii. An embedded system uses two interrupt service routines (ISRs): ISR\_A (higher priority) and ISR\_B (lower priority). ISR\_B starts executing first, and during its execution, ISR\_A is triggered. Which of the following show(s) the correct order of execution for the interrupt handlers in each scenario?

**A. Non-nested interrupt handler**

- 1. ISR\_B executes completely
- 2. ISR\_A executes after ISR\_B finishes

**B. Nested interrupt handler**

- 1. ISR\_B starts
- 2. ISR\_A preempts ISR\_B and executes
- 3. ISR\_B resumes and finishes after ISR\_A

**C. Non-nested interrupt handler**

- 1. ISR\_A interrupts ISR\_B
- 2. ISR\_B resumes after ISR\_A finishes

**D. Nested interrupt handler**

- 1. ISR\_A waits until ISR\_B completes
- 2. ISR\_A starts after ISR\_B

viii. Pick the FALSE statement from the following

- A. Internal fragmentation occurs if a huge block of memory is given for even a small request.
- B. External fragmentation occurs when the available memory is distributed throughout the heap.
- C. In Pooling the entire list of free locations is scanned and adjacent ones are merged
- D. The problem of dangling pointers often arises when there is more than one pointer to a specific block.

2 a)

(7 x 1 mark = 7 marks)

i. Which of the following characteristics makes testing of embedded software difficult?

- A. Realtime behavior
- B. No downtime
- C. Difficult to simulate
- D. Regression

ii. Which type of testing ensures that an embedded system meets specific industry standards and regulatory requirements, such as safety, security, and environmental guidelines?

- A. Performance Testing
- B. Stress Testing
- C. Compliance Testing
- D. Integration Testing

iii. Which of the following elements are present in the ROM emulator?

- A. Cabling device
- B. Fast RAM to substitute for the ROM in the target system
- C. Local control processor
- D. Communications port(s)

iv. When is an **In-Circuit Emulator (ICE)** typically used in embedded system development?

- A. During system integration testing to verify final functionality
- B. After production to check system stability
- C. When the embedded system is running in the field for maintenance
- D. In the early stages of development to debug hardware and software interactions

v. Which of the following are primary features of a **Logic Analyzer**? (One or more answers)

- A. It can measure and visualize timing relationships between multiple digital signals
- B. It can decode communication protocols like SPI, I2C, and UART
- C. It can generate analog waveforms for signal testing

**D.** It can be used to monitor and debug real-time systems with multiple I/O interactions

vi. What is the portion of the debugger that resides in the target?

vii. Name the logical analyzers' two modes of operation?

b. **(2 x 5 marks = 10 marks)**

i) What are the limitations of host testing ? State the reasons why host testing is still required when it has limitations compared to target testing ?

ii) Describe the various embedded tools used for target testing and debugging in an embedded system, when the system is in stable condition ?

**(1 x 10 marks = 10 marks)**

c. Explain in detail the salient features logical analyzer tool, used by Embedded Systems developers in debugging the system ? Also mention the limitations of logical analyzer?

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**

**Department of CSE**

**B.E CSE 6<sup>th</sup> Semester**

**CONTINUOUS ASSESSMENT TEST 3 Date: 17/04/2025**

**19Z034 - Wireless LAN**

**Time: 1 Hour 15 minutes.**

**Maximum Marks: 35**

**INSTRUCTIONS:**

1. Answer **ALL** questions.
  2. Question No. 1 carries 8 Marks and question No. 2 carries 27 Marks
  3. In question No. 1, subdivision a carries total of 8 marks (one mark for each question).
  4. In question No. 2, subdivision a carries total of 7 marks (one mark for each question), subdivisions **b(i)** and **b(ii)** carries 5 marks each and subdivision **c** carries 10 marks.
  5. Course Outcome Table :
- |       |           |      |     |
|-------|-----------|------|-----|
| Qn. 1 | CO 1 to 4 | Qn.2 | CO5 |
|-------|-----------|------|-----|

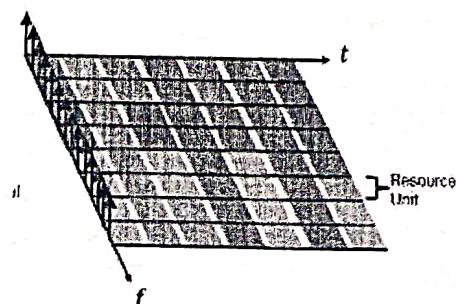
**Group I**

**1. a**

**(8 x 1 mark = 8 marks)**

- Write the alphabet of your choice answer for the questions i, iii, v & vii in the CA test answer book mentioning the question number and subdivision number.
- Write the answer for the Fill in the blanks questions ii, iv, vi & viii in the CA test answer book mentioning the question number and subdivision number.

- i. In 2.4GHz there are \_\_\_\_\_ Non-Overlapping channels in India. **L3**  
 A) 1, 6, and 11      B) 2, 3, and 4      C) 1, 6 and 12      D) 2, 6 and 13
- ii. \_\_\_\_\_ is the mechanism that has enabled the high-speed transmission of data over noisy channels **L2**
- iii.  $a \times b : c$  notation allows in given radio **L3**  
 A) a is the maximum number of receive antennas, b is the maximum number of transmit antennas and c is the maximum number of data spatial streams the radio can use.  
 B) a is the maximum number of transmit antennas, b is the maximum number of receive antennas and c is the maximum number of data spatial streams the radio can use.  
 C) a is the maximum number of transmit antennas, b is the maximum number of receive antennas and c is the maximum number of audio spatial streams the radio can use  
 D) a is the maximum number of receive antennas, b is the maximum number of transmit antennas and c is the maximum number of visual spatial streams the radio can use.
- iv. Target Beacon Transmission Time (TBTT) is \_\_\_\_\_ in Wi-Fi Network. **L2**
- v. A special \_\_\_\_\_ information element, indicates whether broadcast or multicast traffic is buffered on the AP **L3**  
 A) TIM      B) DTIM      C) Capability Information      D) Listen Interval
- vi. 802.1X is a standard used for encrypting and authenticating users to a network through the use of a \_\_\_\_\_ server **L3**
- vii. The following figure shows that **L4**



- A) OFDM      B) DSSS      C) OFDMA      D) Multiuser OFDMA**

L3

viii. KRACK attack is an inclusion of \_\_\_\_\_ attack in Wi-Fi network.

(7 x 1 mark = 7 marks)

2. a

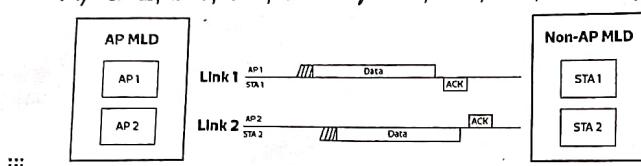
Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

L3

- i. Which Wi-Fi support both OFDM and OFDMA  
 A) Wi-Fi 4       B) Wi-Fi 5       C) Wi-Fi 6       D) Wi-Fi 6 and Wi-Fi 6E
- ii. Match the following
- |                     |                 |
|---------------------|-----------------|
| i. BSS coloring     | - IEEE 802.11be |
| ii. 320 MHz channel | - IEEE 802.11ax |
| iii. 5GHz only      | - IEEE 802.11n  |
| iv. 64 QAM          | - IEEE 802.11ac |

L4

A) a- 2, b-1, c-4, d -3 B) a- 3, b-1, c-4, d -2 C) a- 2, b-4, c-1, d -3 D) a- 1,b-3, c-2, d-4



iii.

Above figure shows which mode of MLO operation

L3

- A) STR       B) NSTR       C) EMLSR       D) MLMR

L2

iv Which security protocol uses RSN mechanism?

- A) WEP       B) WPA       C) WPA2       D) WAP and WPA2

Write the answer for the Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

v. \_\_\_\_\_ Wi-Fi standard supports DL MU-MIMO only.

L3

vi. . IEEE 802.1X defines the encapsulation of the \_\_\_\_\_ protocol over wired and wireless network.

L2

vii. In Wi-Fi, \_\_\_\_\_ is an optional protocol used to minimize collisions in wireless networks, particularly when dealing with the "hidden node" problem.

L2

b.

(2 x 5 marks = 10 marks)

i. Demonstrate how to analyze the capabilities of a Wi-Fi Access Point (AP) and client devices using Wi-Fi protocol analyzers

L3

ii. Demonstrate W-Fi 4 roaming performance analysis

L3

c.

(1 x 10 marks = 10 marks)

i. Design a secure WLAN authentication framework that integrates both WPA3 and RADIUS server authentication methods for enterprise environments. How would you ensure minimal latency and high security?

L5

(or)

ii. Compare the feature sets of Wi-Fi 5, Wi-Fi 6, and Wi-Fi 6E access points. How do these differences impact client device compatibility and network performance in high-density environments?

L5

**PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004**  
**Department of Computer Science and Engineering**  
**B.E CSE, 6**  
**CONTINUOUS ASSESSMENT TEST 3 Date: 17.04.2025**  
**19Z027 - XML and Web Services**

**Time: 1 Hour 15 minutes.**

**Maximum Marks: 35**

**INSTRUCTIONS:**

1. Answer **ALL** questions.
  2. Question No. 1 carries 8 Marks and question No. 2 carries 27 Marks
  3. In question No. 1, subdivision **a** carries total of 8 marks (one mark for each question).
  4. In question No. 2, subdivision **a** carries total of 7 marks (one mark for each question), subdivisions **b(i)** and **b(ii)** carries 5 marks each and subdivision **c** carries 10 marks.
  5. Course Outcome Table :
- |       |           |      |     |
|-------|-----------|------|-----|
| Qn. 1 | CO 1 to 4 | Qn.2 | CO5 |
|-------|-----------|------|-----|

**Group I**

**1. a**

**(8 x 1 mark = 8 marks)**

- Write the alphabet of your choice answer for the questions i, iii, v & vii in the CA test answer book mentioning the question number and subdivision number.
  - Write the answer for the Fill in the blanks questions ii, iv, vi & viii in the CA test answer book mentioning the question number and subdivision number.
- i. The character sequence \_\_\_\_\_ begins a comment and \_\_\_\_\_ ends the comment. [L1]
    - A) <!--, -->
    - B) <, >
    - C) >,<
    - D) start, end
  - ii. \_\_\_\_\_ performs a similar function as comments in that they are not a textual part of an XML document but provide information to applications as to how the content should be processed. [L2]
  - iii. Identify the TRUE statement. [L1]
    - A) The Simple API for XML cannot parse XML documents
    - B) The DOM parser rely on events
    - C) StAX uses a push mechanism and SAX's pull mechanism
    - D) DOM defines an object-oriented and tree structured-based API
  - iv. Predict the output of the following code:

```
<!DOCTYPE html>
<html>
<body>
<p id="demo"></p>

<script>
```

```

var parser, xmlDoc;
var text = "<bookstore><book>" +
"<title>Everyday Italian</title>" +
"<author>Giada De Laurentiis</author>" +
"<year>2005</year>" +
"</book></bookstore>";
parser = new DOMParser();
xmlDoc = parser.parseFromString(text,"text/xml");
document.getElementById("demo").innerHTML =
xmlDoc.getElementsByTagName("title")[0].childNodes[0].nodeValue;
</script>
</body>
</html>

```

[L2]

- v. If a system supports multiple threads of execution, each transaction is unaware of others going on at the same time. [L1]

- A) Atomicity
- B) Consistency
- C) Isolation
- D) Durability

- vi. The SOAP \_\_\_\_\_ indicate the serialization rules for the header entries. [L2]

- vii. The \_\_\_\_\_ element is an optional element that allows breaking up a WSDL document into multiple documents. [L1]

- A) binding
- B) service
- C) documentation
- D) import

- viii. \_\_\_\_\_ pages provide listing of companies that can be queried by name, text description, contact information, and known identifiers. [L2]

2. a

(7 x 1 mark = 7 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

- i. Identify the FALSE statement. [L1]

- A) REST is based on a stateless, client-server, cacheable communications Protocol.
- B) REST is designed to make the best use of the HTTP protocol.
- C) REST is based on principles that promote simplicity, scalability, and statelessness in the design
- D) REST is cannot be used in the development of web services.

ii. \_\_\_\_\_ is a tool that simplifies the API lifecycle from design and development to testing and documentation, making it easier to work with APIs.

[L2]

- A) PostMan
- B) Scibd
- C) SciLab
- D) MatLab

iii. Identify the technology suitable for distributed hypermedia systems.

[L1]

- A) SOAP
- B) REST
- C) SAX Parser
- D) DOM Parser

iv. MongoDB is a document \_\_\_\_\_.

[L2]

- A) Data
- B) Data Structure
- C) Database
- D) Information

Write the answer for the Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

v. \_\_\_\_\_ is an architectural style for designing networked applications, particularly web services that utilize a stateless, client-server model and standard HTTP methods for resource interaction.

[L2]

vi. RESTful API is an \_\_\_\_\_ that two computer systems use to exchange information securely over the internet.

[L2]

vii. Spotify is a streaming service that uses \_\_\_\_\_ APIs to access media from remote servers.

[L2]

b.

(2 x 5 marks = 10 marks)

i. Develop a web application that accepts student\_id and displays the CGPA of the student. Analyze various errors that could arise and say various error codes that exists for helping the end user.

[L4]

ii. Analyze the demerits of SOAP protocol and discuss how REST protocol is advantageous compared to SOAP protocol. Illustrate your answer.

[L4]

c.

(1 x 10 marks = 10 marks)

i. Create a web application for Student Management System for displaying admission result for a graduate programme using REST Based Services.

[L5]

(OR)

ii. Create a web application for Railway Management System for displaying the details of a train using REST Based Services by accepting train\_no. as input.

[L5]