Enrolment No.

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(Established under Govt. of Maharashtra Act No. V of 2023)

SCHOOL OF COMPUTER APPLICATIONS

UNIT TEST-I SEPTEMBER-2025

PROGRAM: BCA	**SEMESTER: III**	**BATCH: 2024-2027**
COURSE CODE & NAME:	**UBC205A / SOFTWARE ENGINEERING USING UML**	
MAXIMUM MARKS:	20	**DATE OF EXAM: -20th SEPTEMBER 2025** **TIME OF EXAM: - 12:10 P.M**

Course Outcomes:

1. Understand the essential characteristics and identify, using examples, the connections between the characteristics of a good software system
2. Understand and apply fundamental object-oriented concepts and terminology for software development.
3. Develop Activity diagrams to model the flow of events for system processes.
4. Draw The basic building blocks of a class diagram: the concepts of "class", "attribute" and "association"
5. Comprehend the identify the different kinds of models used in the development of software and describe the relationship between models, viewpoints, and software development.

Instructions: Give Proper Instructions.

- All questions are compulsory, but attempt only the number of questions mentioned in each section.
- Write answers neatly and to the point, Each question carries 5 marks.
- Use clear diagrams, tables, or charts if required to explain your answer.
- Answer any 2 questions from Q.1 and any 2 questions from Q.2.

Question	CO	BL	Marks
Q.1 Attempt the following (Any 2)		**Max Marks: 10 (2*5)**	
A. Explain Object state, properties Object behavior and methods?	CO1	1	5 Marks
B. Describe any two Object-Oriented methodology in software development.	CO1	1	5 Marks
C. Explain two types of UML diagram with neat diagram?	CO1	1	5 Marks
Q.2 Attempt the following (Any 2)		**Max Marks: 10 (2*5)**	
A. Define the building blocks of a Use Case diagram, including actors and use case guidelines.	CO2	2	5 Marks
B. Describe the relationships between use cases – *extend*, *include*, and *generalize* – with suitable examples.	CO2	2	5 Mark
C. List and Explain the Key Elements with Notations of an Activity Diagram	CO2	2	5 Mark

**********All the Best**********

Figure to the right Indicate the Full Marks.

QUESTIONS		CO	BTL	MARKS
Q.1 ATTEMPT THE FOLLOWING (SOLVE ANY 2 QUESTIONS)		**MAX MARKS: 10 (2*5)**		
A	Define an operating system. What are its primary functions?	CO1	I	05
B	Enumerate the steps involved in the booting process.	CO1	I	05
C	Given the following set of processes with their respective Arrival Times and Burst Times, apply the Non-Pre-emptive Shortest Job First (SJF) scheduling algorithm to: Construct the Gantt chart showing the execution order of processes. Calculate the Completion Time (CT), Turnaround Time (TAT), and Waiting Time (WT) for each process. Compute the average Turnaround Time and average Waiting Time for the entire set.	CO1	II	05

Process	Arrival Time	Burst Time
P1	0	6
P2	2	4
P3	4	3
P4	6	5
P5	8	2

Q.2 ATTEMPT THE FOLLOWING (SOLVE ANY 2 QUESTIONS)		**MAX MARKS: 10 (2*5)**		
A	Explain how shared memory facilitates inter-process communication.	CO2	II	05
B	Describe how the Bakery Algorithm ensures fairness and mutual exclusion in process synchronization.	CO2	II	05
C	Explain Deadlock and describe its various strategies.	CO2	II	05

**********All the Best**********

19/09/2025 18:11

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SCHOOL OF COMPUTER APPLICATIONS
DEPARTMENT OF BCA/B.Sc(CS)
Unit Test-I SEPTEMBER-2025

Program:BCA/B.Sc.(CS)	**Semester: III**	**Batch:2024**
Course Code & Name:	**UBC207/UBS207 STATISTICAL TECHNIQUES**	
Maximum Marks:20	20	**Date of Exam: -20th Sept 2025** **Time of Exam: -4:45 P.M.**

Course Outcomes:
1. Define the meaning, scope, limitations of statistics.
2. Explain the need of primary and secondary data.
3. Illustrate the different technique of simple bar, multiple bar, percentage bar diagram, pie diagram.
4. Simply the use of central tendency to solve different statistical problems.
5. Interpret the concepts of probability for solving the real life problems.

Instructions:
1) Each question carries equal marks.
2) Draw the graph on given answer sheet only.

	QUESTIONS	CO	BTL	Marks
Q.1 Attempt the following (Any 2)		**Max Marks: 10 (2*5)**		
A	Define Meaning & Scope of statistics.	CO	1	05
B	What are different techniques of data collection?	CO	1	05
C	What is Tabulation & list various types of tabulation.	CO	1	05

Q.2 Attempt the following (Any 2) — **Max Marks: 10 (2*5)**

A — The table below shows the favourite colour of 200 kids in a class.

Favourite Colours	Red	Green	Blue	Yellow	Orange
Number of students	45	17	50	48	40

CO | 2 | 05

B — Draw a suitable bar graph from following table

Month	Quarterly Sales (in units)		
	Soap 1	Soap 2	Soap 3
April	150	210	315
May	250	350	440
June	320	430	550

150 + 210 + 315 = 675
250 + 350 + 440 = 1040

CO | 2 | 05

C Create a Pie Chart from following data

Singing	Reading Books	Dancing	Painting	Others
16	20	10	30	24

CO 2 05

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SCHOOL OF COMPUTER APPLICATIONS
DEPARTMENT OF BCA/B.Sc(CS)
Unit Test-II OCTOBER-2025

PROGRAM:BCA/B.SC.(CS)	**SEMESTER: III**	**BATCH:2024**
COURSE CODE & NAME:	**UBC207/UBS207 STATISTICAL TECHNIQUES**	
MAXIMUM MARKS:	20	**DATE OF EXAM:-14TH OCTOBER 2025** **TIME OF EXAM: -2:45 P.M**

Course Outcomes:

1. Define the meaning, scope, limitations of statistics.
2. Explain the need of primary and secondary data.
3. Illustrate the different technique of simple bar, multiple bar, percentage bar diagram, pie diagram.
4. Simply the use of central tendency to solve different statistical problems.
5. Interpret the concepts of probability for solving the real life problems.

Instructions: Give Proper Instructions.

1) Each question carries equal marks.
2) Draw the graph on given answer sheet only.
3) Use of Calculator is allowed

	QUESTIONS	CO	BTL	Marks
Q.1	**Attempt the following (Any 2)**			**Max Marks: 10 (2*5)**
A	The following are the monthly salaries (in ₹'000) of 8 employees in a firm: 25, 28, 30, 22, 35, 40, 45, 25 **Calculate the Arithmetic Mean** and interpret what it represents.	CO3	3	05
B	The following table shows the **distribution of monthly wages** of employees in a company: **Wages (₹)** | 0–100 | 100–200 | 200–300 | 300–400 | 400–500 | 500–600 **No. of Employees** | 5 | 8 | 12 | 20 | 10 | 5 **Find the Median wage** of employees.	CO3	3	05
C	The ages of employees in a company are distributed as follows: Age (years) | 20–30 | 30–40 | 40–50 | 50–60 | 60–70 Employees | 8 | 22 | 35 | 25 | 10 Find Q_1, Q_3, and Q.D.	CO3	3	05
Q.2	**Attempt the following (Any 2)**			**Max Marks: 10 (2*5)**
A	**Explain** the concept of a **random experiment** and distinguish it from a deterministic experiment with suitable examples.	CO4	2	05
B	**Describe** the term **algebra of events**. How are operations like **union, intersection, and complement** used in event analysis?	CO4	4	05
	A dice is thrown twice. • Define the sample space • Identify all **elementary and composite events**	CO4	3	05

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SCHOOL OF COMPUTER APPLICATIONS
DEPARTMENT OF BCA
UNIT TEST-II OCTOBER 2025

PROGRAM: BCA	**SEMESTER:** 3RD		**BATCH** 2024-2027
COURSE CODE	**UBC 203 / MAJM**	**COURSE NAME: - OPERATING SYSTEMS -LINUX**	
MAXIMUM MARKS:	20	**DATE OF EXAM: -14TH OCTOBER 2025** **TIME OF EXAM: - 11:30 A.M**	

Course Outcomes:

1. To Understand the fundamental operating system abstractions, including processes, threads, semaphores and file systems.
2. To Apply the implement scheduling, devising and addressing synchronization issues
3. To Comprehend the concept of gain an understanding of memory management tasks.
4. To Develop real-time working of storage management techniques.
5. To Comprehend the basics of virtualization and differentiate types of virtualizations.

Instructions: ***All Questions Carry Equal Marks.***
Justify your answer with suitable example where necessary.
Figure to the right Indicate the Full Marks.

	QUESTIONS	CO	BTL	MARKS
Q.1 ATTEMPT THE FOLLOWING (SOLVE ANY ONE QUESTION)		**MAX MARKS: 10 (1*10)**		
A	Illustrate the concept of swapping in operating systems. Why is it necessary in memory management, and how does it help improve CPU utilization? Support your answer with a simple example or diagram.	CO3	III	10
B	Explain how segmentation provides better memory protection compared to paging.	CO3	III	10
Q.2 ATTEMPT THE FOLLOWING (SOLVE ANY ONE QUESTION)		**MAX MARKS: 10 (1*10)**		
A	Distinguish between sequential, direct, and indexed access methods with suitable example.	CO4	IV	10
B	Identify the Role of directory in an operating system also Explain its Structure With a Suitable example	CO4	IV	10

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SCHOOL OF COMPUTER APPLICATIONS
DEPARTMENT OF BCA

CLASS TEST-II OCTOBER -2025

PROGRAM: BCA SY	SEMESTER: III	BATCH: 2024-2027
COURSE CODE & NAME:	UBC20E8 / INTRODUCTION TO ETHICAL HACKING	
MAXIMUM MARKS:	30	DATE &TIME OF EXAM: - 13/10/2025 & 2:45 PM TO 3:45 PM

COURSE OUTCOMES:

1. Recall And Identification Of Perform Assessment Of Network, Web And System For Weaknesses And Penetrate If Needed
2. Analyze The Draft Detailed Report Which Includes Vulnerabilities, Threats, Risks And Its Impact On System Hacking
3. Implement Industry Standard Security Protocols To Minimize Cyber Attacks
4. Recall The Concept Of Cryptography
5. Apply And Concur The Consequences Of Cyber Attacks

Instructions: Give Proper Instructions.

- All questions are compulsory, but attempt **only the number of questions mentioned** in each section.
- Write answers neatly and to the point. Each question carries **5 marks**.
- Use **clear diagrams, tables, or charts** if required to explain your answer.
- Answer **any 2 questions from Q.1** and **any 2 questions from Q.2**

Question	CO	BL	Marks
Q.1 Attempt the following (Any 3)	Max Marks: 10 (2*5)		
A. Describe an active directory in detail?	CO3	2	5 Marks
B. Explain Kerberos and how Kerberos works.	CO3	2	5 Marks
C. Explain LDAP with a diagram?	CO3	2	5 Marks
Q.2 Attempt the following (Any 2)	Max Marks: 10 (2*5)		
A. What is a Symmetric Encryption?	CO4	2	5 Marks
B. What is an Asymmetric Encryption?	CO4	2	5 Marks
C. Explain Steganography?	CO4	2	5 Marks

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SCHOOL OF COMPUTER APPLICATIONS
DEPARTMENT OF BCA
UNIT TEST-II OCTOBER-2025

PROGRAM: BCA	**SEMESTER III**	**BATCH:2024-27**
COURSE CODE & NAME:	**UBC201/MAJM PROGRAMMING WITH C++**	
MAXIMUM MARKS:	20	**DATE OF EXAM:13TH OCTOBER 2025** **TIME OF EXAM: - 11:30 A.M**

Course Outcomes:

1. Understand the need and features of OOP and idealize how C++ differs from C.
2. Recall the knowledge on various types of overloading.
3. Apply the suitable inheritance while proposing solution for the given problem.
4. Explain pointers and effective memory management.
5. Develop the concept of file handling in C++ and handle exceptions using case study.

		QUESTIONS	CO	BTL	Marks
Q.1 Attempt the following (Any 2)					**Max Marks: 10 (2*5)**
	A	What are Base Class and Derived Class? Write the general syntax for defining a derived class in C++ and explain the role of access specifiers in inheritance.	CO3	2	05

	B	Consider the following base class
		class Shape {
		protected:
		int width, height;
		};
		Write a derived class Rectangle that inherits from Shape and includes a function getArea() to calculate the area.
		Demonstrate the output using appropriate setWidth() and setHeight() functions.
			CO3	3	05

	C	Explain the following types of inheritance with suitable examples: a) Single Inheritance b) Multiple Inheritance c) Multilevel Inheritance	CO3	2	05
Q.2 Attempt the following (Any 2)					**Max Marks: 10 (2*5)**
	A	What is Function Overriding? Write a C++ program to demonstrate how a derived class overrides a base class function with the same name and parameters.	CO4	3	05
	B	Explain the concept of pointers in C++ with syntax and an example. Differentiate between the use of address-of (&) and dereference (*) operators with illustration.	CO4	3	05
	C	Define and differentiate between the following special types of pointers with examples: a) Wild Pointer b) NULL Pointer c) Dangling Pointer d) Void Pointer	CO4	3	05

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SCHOOL OF COMPUTER APPLICATIONS

Class Test-II October - 2025

PROGRAM: BCA SY	SEMESTER: III	BATCH: 2024-2027
COURSE CODE & NAME:	UBC205A / SOFTWARE ENGINEERING USING UML	
MAXIMUM MARKS:	20	DATE &TIME OF EXAM: 15/10/2025 & 11:15 AM TO 12:15 PM

Course Outcomes:

1. Understand the essential characteristics and identify, using examples, the connections between the characteristics of a good software system.
2. Understand and apply fundamental object-oriented concepts and terminology for software development.
3. Develop Activity diagrams to model the flow of events for system processes.
4. Draw The basic building blocks of a class diagram: the concepts of "class", "attribute" and "association"
5. Comprehend the identify the different kinds of models used in the development of software and describe the relationship between models, viewpoints, and software development.

Instructions: Give Proper Instructions.

- All questions are compulsory, but attempt **only the number of questions mentioned** in each section.
- Write answers neatly and to the point. Each question carries **5 marks.**
- Use **clear diagrams, tables, or charts** if required to explain your answer.
- **Answer any 2 questions from Q.1 and any 2 questions from Q.2.**

Question	CO	Bl	Marks
Q.1 Attempt the following (Any 2)	Max Marks: 10 (2*5)		
A. Describe association and inheritance relationships in class diagrams with examples?	CO3	2	5 Marks
B. Compare aggregation and composition with examples?.	CO3	3	5 Marks
C. Give the details of UML Class Notation with visibility and multiplicity, explain with example	CO3	2	5 Marks
Q.2 Attempt the following (Any 2)	Max Marks: 10 (2*5)		
A. Draw a Class Diagram for a *Library Management System*. A Member can borrow many books, each transaction is handled by one Librarian.	CO4	4	5 Marks
B. Design a Class Diagram for an *Online Shopping System*. One customer can place multiple orders, and each order can have multiple products.	CO4	4	5 Marks
C. Develop a Class Diagram for a *Food Delivery App* such as Swiggy or Zomato. A restaurant offers many menu items, one customer can place many orders, and each order is delivered by one delivery agent.	CO4	4	5 Marks