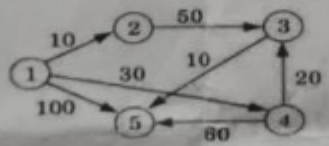
UNITED UNIVERSITY	END TERM EXAMINATION	EVEN SEM. 2024-25	ROLL NO.

TIME: 3 HRS.	COURSE (BRANCH): BCA / BCA(HM)	SEMESTER: IV
	SUBJECT: Design & Analysis of Algorithms SUBJECT CODE: CAUCBCA403T	MM: 100

		SECTION –A (ATTEMPT ALL QUESTIONS)	20	CO	BLOOMS TAXONOMY LEVEL
1	A	Define term **Algorithms** and **Analysis of Algorithms**	2	CO1	K1
	B	Write the time complexity of Linear search and binary search algorithm.	2	CO1	K1
	C	Discuss Divide and Conquer Technique.	2	CO2	K2
	D	Write down the properties of Red Black Tree.	2	CO2	K1
	E	Describe the fractional knapsack problem.	2	CO3	K2
	F	Write down advantages of Prim's algorithm.	2	CO3	K1
	G	List any three applications of Dynamic Programming.	2	CO4	K1
	H	Discuss N-Queen Problem.	2	CO4	K2
	I	Define string matching and its types.	2	CO5	K1
	J	What do you understand by P and NP problems?	2	CO5	K2
		SECTION –B (ATTEMPT ANY FIVE QUESTIONS)	**30**		
2	A	Solve following recurrence relation using substitution method. **$T(n) = 2T(n/2) + n$**	6	CO1	K3
	B	Define asymptotic notation. Also, explain various asymptotic notations and give their significance.	6	CO1	K2
	C	Write Merge Sort Algorithm. Also, explain the Performance of Merge Sort.	6	CO2	K3
	D	Discuss Single Source Shortest Path and its type by taking suitable example.	6	CO3	K2
	E	Explain Graph Coloring Problem with suitable example.	6	CO4	K2
	F	Discuss Rabin Karp string matching algorithm with suitable example.	6	CO5	K2
		SECTION –C (ATTEMPT ANY ONE PART FROM EACH QUESTION)	**50**		
3	A	Write Counting Sort algorithm. Illustrate the operation of Counting sort on the array **A = {6, 0, 2, 0, 1, 3, 4, 6, 1, 3, 2}.**	10	CO1	K3
	B	Discuss Bubble with algorithm. Also, write complexity of bubble sort in all three cases.	10	CO1	K2
4	A	Write the difference between Fibonacci and Binomial heap with suitable example.	10	CO2	K2
	B	Define Quick Sort algorithm. Also, prove that the running time complexity of Quick sort is **O(nlogn)** in best and average case,	10	CO2	K3
5	A	Explain Minimum Spanning Tree with example. Also, write an algorithm of Kruskal to compute minimum spanning tree.	10	CO3	K3
	B	Apply Dijkstra's algorithm to find shortest path [**Hint:** Starting Vertex is 1]. 	10	CO3	K3
6	A	Discuss the Longest Chain Subsequence (LCS) problem. Also, write an algorithm to compute an LCS. Solve the LCS for **X = {A, B, C, B, D, A, B}** and **Y = {B, D, C, A, B, A}.**	10	CO4	K3
	B	Write short note (with example) on any TWO i) 0/1 Knapsack ii) Assembly Line Scheduling iii) Matrix Chain Multiplication	10	CO4	K1
7	A	How does KMP string matching algorithm work? Apply the same on P= "ababa" T="ababbabababa"	10	CO5	K2
	B	Write short note (with example) on any TWO i) Naïve String Matching ii) NP Completeness iii) Vertex Cover Problem	10	CO5	K1

CO MARKS DISTRIBUTION	CO1-36	CO2-30	CO3-30	CO4-30	CO5-30
BLOOMS TAXONOMY DISTRIBUTION	K1- 32	K2- 32	K3- 62	K4-0	K5-0

UNITED UNIVERSITY	END TERM EXAMINATION	EVEN SEM 2024-25	ROLL NO.										
TIME: 3 HRS.	COURSE (BRANCH)- Computer Application (BCA AND BCA-IBM)											SEMESTER 4th	
	SUBJECT- Advanced Web Design		SUBJECT CODE-CAUCBC406T									MM. 100	

1		SECTION –A (ATTEMPT ALL QUESTIONS)	20	CO	
	A	Define www and cache?	2	CO5	K1,K2
	B	Define html and html5?	2	CO1	K1
	C	Write the applications & advantages of php?	2	CO4	K1
	D	What is web servers ?	2	CO5	K1
	E	Define loop with example in javascript?	2	CO3	K1
	F	What is flow of control? Describe each with example in js?	2	CO3	K1
	G	What is the use of the <article> and <section> elements in HTML5?	2	CO1	K1
	H	Describe the color and container in bootstrap css.	2	CO2	K2
	I	Define <button> and <input> tag in html5	2	CO1	K1
	J	Define web browser with example	2	CO5	K1
		SECTION –B (ATTEMPT ANY FIVE QUESTIONS)	30		
2	A	Write a JavaScript function to validate if a user has entered a valid email in a form field.	6	CO3	K3
	B	What is the DOM? Describe how JavaScript interacts with the DOM.	6	CO3	K1
	C	What is Web 2.0? List its key features.	6	CO5	K1
	D	Write short notes on the following: • (i) AJAX • (ii) JSON	6	CO5	K2
	E	Describe how to create and read cookies in PHP.	6	CO4	K2
	F	Explain the use of <details> and <summary> tags.	6	CO1	K2
		SECTION –C (ATTEMPT ANY ONE PART FROM EACH QUESTION)	50		
	A	Write the HTML code to create a form with input fields: Name, Email, and a submit button.	10	CO1	K1
	B	Write a program to demonstrate the use of nested if-else statement in php.	10	CO4	K3
A		What is Operator? How many types of operators present in javascript? Describe any three in details.	10	CO3	K1
B		Differentiate between client-side and server-side scripting. Briefly introduce JavaScript as a client-side scripting language.	10	CO3	K1, K2
A		Write the program for displaying even or odd number in javascript.	10	CO3	K3
B		Briefly introduce HTML5 and highlight three key advantages it offers over previous HTML versions.	10	CO1	K1
A		What is PHP ? explain its basic syntax. How is PHP typically integrated with HTML?	10	CO4	K1
B		Briefly explain the concepts of the World Wide Web (WWW) and the HTTP protocol (Request and Response).	10	CO5	K1, K2
A		Create a basic HTML5 webpage template that includes the following structural elements: <header>, <nav>, <main>, and <footer>. Include placeholder content within each element..	10	CO1	K3
		Explain the CSS Bootstrap framework. What are its primary benefits for web development?	10	CO2	K2

ARKS DISTRIBUTION	CO1-42	CO2-12	CO3-46	CO4-30	CO5-30	
MS TAXONOMY DISTRIBUTION	K1-17	K2-7	K3-4	K4-	K5-	

UNITED UNIVERSITY	END TERM EXAMINATION	EVEN SEM 2024-25	ROLL NO.	2	3	2	0	1	0	0	5	2
COURSE (BRANCH) : BCA(IBM)												
TIME-3 HRS.	SUBJECT- Machine learning	SUBJECT CODE- CAUIBC401T										

SEMESTER- 4TH

MM. 100

SECTION –A (ATTEMPT ALL QUESTIONS)

			20	CO	BLOOM'S TAXONOMY LEVEL
1	A	What type of algorithm should be used to make different classes from a big data set.	2	CO1	K1
	B	Write any 3 real life applications of regression problems.	2	CO1	K1
	C	Write any 3 real life applications of KNN or SVM.	2	CO3	K2
	D	Define sigmoid function and its use in classification.	2	CO3	K2
	E	What are agents and environment in reinforcement learning.	2	CO4	K2
	F	What is bias-variance trade-off?	2	CO4	K3
	G	What does recall and precision mean in a confusion matrix.	2	CO2	K2
	H	Explain the equation of SVM margin using a diagram.	2	CO2	K3
	I	What is non-linearly separable data what could be done in such case.	2	CO5	K2
	J	What is variance in clustering?	2	CO5	K3
		SECTION –B (ATTEMPT ANY FIVE QUESTIONS)	30		
2	A	Define reinforcement learning and its components with suitable example.	6	CO1	K3
	B	What do you understand by the under fitting and over fitting of a machine learning model explain briefly.	6	CO2	K4
	C	Write down the steps of classification in logistic regression.	6	CO2	K3
	D	Explain the difference between core point and boundary point with all their features and diagram.	6	CO3	K4
	E	Given the confusion matrix below for a model that classifies emails as **Spam** or **Not Spam**, answer the following questions: **Predicted Spam** **Predicted Not Spam** **Actual Spam** 40 (True Positive) 10 (False Negative) **Actual Not Spam** 5 (False Positive) 45 (True Negative) Find out accuracy, precision, recall, F1-score and specificity of the model.	6	CO4	K2
	F	A model is trained to classify whether a patient is **diseased** (Positive class) or **healthy** (Negative class). The confusion matrix for the model is as follows: **Predicted Diseased (Positive)** **Predicted Healthy (Negative)** **Actual Diseased** 50 (True Positive) 20 (False Negative) **Actual Healthy** 10 (False Positive) 100 (True Negative) Using the given confusion matrix, calculate and explain the following: 1. **Recall** for the **diseased** (Positive) class.	6	CO4	K4

UNITED UNIVERSITY	END TERM EXAMINATION	EVEN SEM 2024-25	ROLL NO. 2220101552
TIME: 3 HRS.	COURSE (BRANCH)-BCA / BCA (IBM) SUBJECT-OPERATING SYSTEM	SUBJECT CODE- CAUCBC402T	SEMESTER- IV MM. 100

		SECTION –A (ATTEMPT ALL QUESTIONS)	20	CO	[illegible]
1	A	What is an operating system? Discuss the main services of the Operating System.	2	CO1	K2
	B	Discuss the difference between monolithic kernel and microkernel.	2	CO1	K1
	C	What are the performance criteria in CPU Scheduling?	2	CO2	K1
	D	Explain Inter Process Communication Models and schemes.	2	CO2	K2
	E	Define the Critical Section Problem and it's solution.	2	CO3	K2
	F	What are Semaphores? Define it's types.	2	CO3	K1
	G	Explain the difference between logical address space and physical address space.	2	CO4	K2
	H	What do you understand by the term "Thrashing", how does it occur?	2	CO4	K2
	I	What is the difference between seek time and latency time?	2	CO5	K1
	J	What are the various operations performed in a File?	2	CO5	K1
		SECTION –B (ATTEMPT ANY FIVE QUESTIONS)	30		
2	A	What is system call? Describe the relationship between system calls and the services provided by an operating system.	6	CO1	K1
	B	What is the difference between simple structure and layered structure? Explain it with the help of suitable diagrams.	6	CO1	K2
	C	Explain in details about Threads and their management.	6	CO2	K2
	D	Define deadlock in operating systems, discussing the system model and necessary conditions for deadlock occurrence.	6	CO3	K2
	E	Explain principle of paging and segmentation in memory management techniques, comparing their suitability for different system architectures.	6	CO4	K3
	F	Explain the details of disk structure with a suitable diagram.	6	CO5	K2
		SECTION –C (ATTEMPT ANY ONE PART FROM EACH QUESTION)	50		
3	A	How can operating systems be classified into different categories based on their design and purpose?	10	CO1	K2
	B	Describe the major functions of the operating systems.	10	CO1	K2
4	A	Consider the set of processes given in the table and draw the Gantt chart and find out the average waiting time and average turnaround time for following scheduling algorithm.	10	CO2	K3

Process	Arrival Time	Execution Time
P0	0	4
P1	2	7
P2	3	3
P3	3.5	3
P5	4	5

(a) FCFS (b) Round Robin (Quantum = 2) (c) Round Robin (Quantum = 1)

	B	Consider the set of processes given in the table and draw the Gantt chart and find out the average waiting time and average turnaround time for following scheduling algorithm.	10	CO2	K3

Process	Arrival Time	Execution Time
P0	0	7
P1	1	5
P2	2	3
P3	6	2
P5	12	3

(a) SJF (b) SRTF

	A	Define process and process control block. Also describe process state transition diagram in details.	10	CO3	K3
	B	Explain the Producer Consumer problem and also provide it's solution using semaphores.	10	CO3	K4
	A	Discuss Virtual Memory concepts, including address translation, page tables and demand paging mechanism.	10	CO4	K2
	B	Consider the following reference string : 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 Compute the number of page faults using (a) FIFO (b) LRU (c) Optimal	10	CO4	K4
	A	Explain about the concept of File. Define the File organization and access mechanism.	10	CO5	K2
	B	Suppose the moving head disk with 200 tracks is currently serving a request for the track 53 and the status of the queue is :- 98, 183, 37,122, 14, 124, 65,67. What is the total head movement for the following scheduling algorithms? :- (a) FCFS (b) SSTF	10	CO5	K3

MARKS DISTRIBUTION	CO1-36	CO2-30	CO3-30	CO4-30	CO5-30	
[illegible] TAXONOMY DISTRIBUTION	K1-16	K2-74	K3-46	K4-	K5-0	