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ARKA JAIN
University
 Jharkhand

 END SEM EXAMINATION
 School of Engineering & IT

Program Bachelor of Computer Application

Subject Name

Environmental Science

Semester

II

Year

June 2024

 • Start writing from 2nd page onwards; **don't Write on the 1st Page Backside**

• Answer all Questions of Section A (Compulsory)

• Answer Any Four out of Six of Section B

• Answer Any Three out of Five of Section C

 • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under Unfair Means and will Result in the Cancellation of the Paper(s).

 Time: 3 Hour
 Max. Marks : 70

 Knowledge
 Level (KL)

K1 : Remembering

K5 : Evaluating

K2 : Understanding

K3 : Applying

K4 : Analysing

K6 : Creating

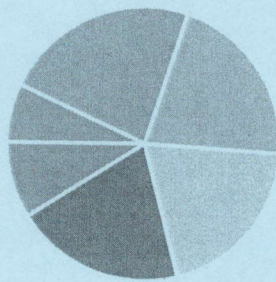
Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N1	QUESTIONS	Marks	COs	KL
i	What is Forest Conservation Act?	2	CO1	K1
ii	What are the Natural resources? *	2	CO2	K2
iii	Who are producers and consumers?	2	CO1	K3
iv	What are the different types of energy?	2	CO2	K1
v	What are the causes for soil erosion?	2	CO2	K1
vi	Explain ecological pyramid.	2	CO2	K4
vii	Explain Biodiversity.	2	CO1	K3
viii	What is food chain?	2	CO4	K5
ix	What is ecological succession?	2	CO3	K6
x	What is biomedical waste?	2	CO4	K4

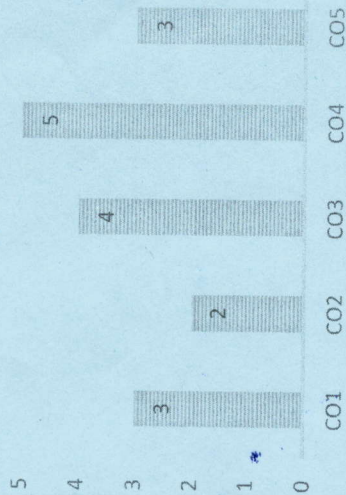
Course Outcomes	CO1	Concept clarification about the components of environment and their inter relatedness
	CO2	Understanding of all the resources available and their origin and the ways to conserve them for sustainable future.
	CO3	To evaluate the environment and various species present and their importance and ways to conserve biodiversity.
	CO4	To construct and evaluate ways of managing solid waste and safe disposal techniques.
	CO5	To understand various measures undertaken by Government and laws related to protection of environment.

GRAFICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course outcome wise marks distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What is the role of the government in environmental protection?	05	CO2	K1
3	Explain the concept of acid rain and its effects on the environment.	05	CO1	K2
4	What are the causes and consequences of deforestation?	05	CO2	K2
5	How does global warming affect ecosystems?	05	CO1	K3
6	Explain the concept of renewable and non-renewable resources.	05	CO3	K4
7	What are the different threats to Biodiversity?	05	CO4	K3

Section C (Answer any THREE out of FIVE) – 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the concept of In - Situ and Ex - Situ Conservation.	10	CO4	K3
9	What is the greenhouse effect and its role in climate change?	10	CO3	K4
10	What are the major sources and impacts of water pollution?	10	CO4	K2
11	What are the major causes and solutions for solid waste management?	10	CO2	K6
12	What is the ozone layer? Explain the causes and consequences of ozone depletion.	10	CO4	K5

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END SEM EXAMINATION
School of Engineering & IT

Program Bachelor of Computer Application

Semester II
Year June 2024

Subject Name Object Oriented Programming with C++

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Three out of Five of Section C
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Time: 3 Hour
Max. Marks : 70

Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q. N1	QUESTIONS	Marks	COs	KL
i	What is the role of a constructor in classes?	2	CO1	KL1
ii	Write the Syntax to overload + operator?	2	CO1	KL1
iii	What are the different types of inheritance?	2	CO2	KL3
iv	List two properties of Object Oriented Programming	2	CO2	KL5
v	Give an example of an Encapsulation?	2	CO3	KL2
vi	What is the use of the Scope Resolution?	2	CO2	KL3
vii	Write a Program in C++ to print number from 1 to 50	2	CO4	KL6
viii	What is Copy Constructor	2	CO1	KL3
ix	Name three access specifier	2	CO2	KL2
x	Define class and object	2	CO5	KL3

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss the Importance of Data Abstraction and Encapsulation with a real time example.	05	CO 1	KL 5
3	Differentiate between Class and Object. Describe them by giving an example.	05	CO 1	KL 1
4	Why Operator Overloading is used in C++? How to Overload operators in C++?	05	CO 2	KL 3
5	Create a base class called Vehicle with data members like make and model. Derive two classes, Car and Bike, from the Vehicle class. Implement member functions to display the make and model of each vehicle.	05	CO 4	KL 4
6	Define Inheritance? List out the different types of inheritance with its concept?	05	CO 5	KL 6
7	Create a class representing a complex number with data members for real and imaginary parts. Implement overloaded operators for addition and subtraction of complex numbers.	05	CO 1	KL 2

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss the Unique advantages of Object Oriented Programming paradigm?	10	CO 3	KL 5
9	What are the various types of Constructor? Give an example for each. Whether constructor could be overload? Justify Your answer through an example.	10	CO 2	KL 2
10	Create a base class shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get data () to initialize base class data member and another member function display area () as a virtual function and redefine this function in the derived class to suit their requirements. Using these three classes, design a program that will accept dimensions of a rectangle or a triangle interactively and display the area. Remember the two values given as input will be treated as length of two sides in case of rectangle and base and height in case of triangles.	10	CO 5	KL 4

11	An electricity board charges the following rates to domestic users to discourage large consumption of energy. Units Consumed Charge Upto 100 units ₹1.50 per unit For next 200 units ₹3.00 per unit More than 300 units ₹5.00 per unit All the users are charged a minimum of Rs. 100. If the total cost exceeds Rs.250, then an additional charge of 15% is added. Write a program to read the names of the user and number of units consumed and print out the charges with names.	10	CO 3	KL 5
12	Define the Following a. Abstract Data Type b. Polymorphism c. Virtual Function d. Encapsulation e. Function Overriding	10	CO 4	KL 2

CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Analyze the logic of a given problem
	CO2	Use branching control statements and iterative control statements using C++.
	CO3	Demonstrate the concepts of Reusability through the use of functions, Inheritance & Polymorphism
	CO4	Analyze the problem statement and decide the logic to solve the problem using C++ Programming.

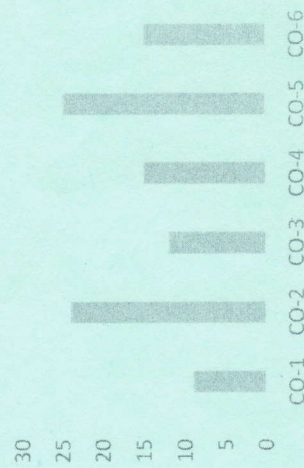
GRAFICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



CO-1 CO-2 CO-3 CO-4 CO-5 CO-6

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END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor of Computer Application	
Subject Name	Numerical & Statistical Methods	
	Semester	II
	Year	June 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under Unfair Means and will Result in the Cancellation of the Paper(s). 	
Knowledge Level (KL)	K1 : Remembering	K3 : Applying
	K2 : Understanding	K4 : Analysing
		K5 : Evaluating
		K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q.N1	QUESTIONS	Marks	COs	KL
i	Find the standard deviation of 8,10,12,14,16.	2	CO1	K2
ii	A quadratic equation $x^2-4x+4=0$ is defined with an initial guess of 3 and 2.5. Find the approximated value of root using Secant Method.	2	CO4	K3
iii	Rate of convergence of the Newton-Raphson method is generally _____	2	CO2	K1
iv	A piece of iron rod was measured and found to be 120cms. But the actual value of the wood is 123cms. Find the relative error?	2	CO1	K2
v	The equation $f(x)$ is given as $x^2 - 4=0$. Considering the initial approximation at $x=6$ then find the value of next approximation correct upto 2 decimal places.	2	CO3	K2
vi	Find the approximate value of $(1.04)^{3.01}$.	2	CO1	K3
vii	Numerical techniques more commonly involve _____ method due to the degree of accuracy involved.	2	CO2	K1
viii	The Bisection method is also known as _____ Chopping.	2	CO4	K1
ix	How do you calculate least squares?	2	CO3	K3
x	Determine the mean number of heads in the three tosses of a coin.	2	CO2	K2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL															
2	What is a mathematical model? With the help of a flowchart, explain the of solving an engineering problem.	05	CO1	K3															
3	Find a root of an equation $f(x) = \sqrt{12}$ between 2 and 4, using Bisection method.	05	CO3	K4															
4	1. Find Solution using Lagrange's Interpolation formula	05	CO4	K5															
	<table border="1"> <thead> <tr> <th>x</th> <th>f(x)</th> </tr> </thead> <tbody> <tr> <td>300</td> <td>2.4771</td> </tr> <tr> <td>304</td> <td>2.4829</td> </tr> <tr> <td>305</td> <td>2.4843</td> </tr> <tr> <td>307</td> <td>2.4871</td> </tr> </tbody> </table>	x	f(x)	300	2.4771	304	2.4829	305	2.4843	307	2.4871								
x	f(x)																		
300	2.4771																		
304	2.4829																		
305	2.4843																		
307	2.4871																		
5	If, $x = 301$, Find the Value $f(2)$ Solve the system of equations using the Gauss-Seidel Method $45x + 22y + 3z = 58$ $-3x + 11y + 2z = 47$ $5x + 2y + 20z = 67$	05	CO3	K3															
6	Obtain the result correct to three decimal places. Fit a regression line of y on x using least square method. Estimate y when $x = 3$.	05	CO4	K4															
	<table border="1"> <thead> <tr> <th>x</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <th>y</th> <td>14</td> <td>13</td> <td>9</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>2</td> </tr> </tbody> </table>	x	2	3	4	5	y	14	13	9	5					2			
x	2	3	4	5															
y	14	13	9	5															
				2															
7	Find the probability distribution for the number of doublets in the three throws of a pair of dice.	05	CO2	K5															

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	A six sided die is marked '1' on one face, '3' on two of its faces, and '5' on remaining three faces. The die is thrown twice. If X denotes the total score in two throws, find (i) the probability mass function (ii) the cumulative distribution function (iii) $P(4 \leq X < 10)$ (iv) $P(X \geq 6)$	10	CO1	K1
9	Find a root of an equation $f(x) = 2x^2 - 2x - 5$ using False Position method.	10	CO2	K3

Using Newton's Backward Difference formula to find solution

x	f(x)
0.0	1.0000
0.1	0.9975
0.2	0.9900
0.3	0.9776
0.4	0.8604

$x = 0.3$

From the following table, find the area bounded by the curve and x axis from $x=7.47$ to $x=7.52$ using Simpson's 3/8 rule.

x	7.47	7.48	7.49	7.50	7.51	7.52
f(x)	1.93	1.95	1.98	2.01	2.03	2.06

Find the equation of regression lines and estimate y for $x = 1$ and x for $y = 4$.

X	3	2	-1	6	4	-2	5	7
Y	5	13	12	-1	2	20	0	-3

CO- Course Outcomes,

KL- Knowledge Level,

PO – Program Outcome

CO1

Understand and appreciate descriptive statistics.

CO2

Understand the concepts of probability and random variable.

CO3

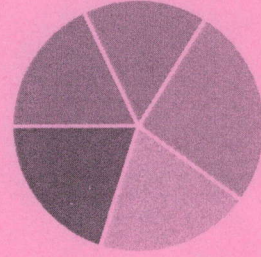
Interpolation, approximation, and integration of Functions.

CO4

Initial values problems governed by ordinary differential equations.

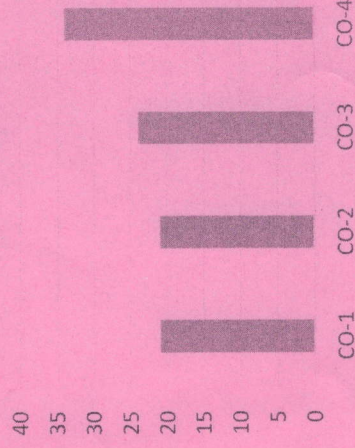
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5

Course Outcome wise Marks Distribution



380

20/6/24

E



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END SEM EXAMINATION
School of Engineering & IT

Branch	Bachelor of Computer Application			Program	BCA
Subject Name	Operating System			Semester	II
				Year	June 2024
Time: 3 hours max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>. 				
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N 1	QUESTIONS	Marks	COs	KL	
i	What is a process?	2	CO1	KL1	
ii	Explain the concept of process states.	2	CO1	KL2	
iii	What is virtual memory?	2	CO3	KL2	
iv	How does a system prevent fragmentation?	2	CO3	KL3	
v	What is a file system?	2	CO4	KL2	
vi	Explain the directory structure used in UNIX-based systems.	2	CO5	KL3	
vii	What is Demand Paging?	2	CO3	KL4	
viii	What are the various File Operations?	2	CO2	KL2	
ix	What are the advantages of Contiguous Allocation?	2	CO6	KL3	
x	What is system calls in operating System	2	CO3	KL1	

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)		Q. No.	QUESTIONS	Marks	COs	KL																
2	Explain the process scheduling with a neat diagram in the operating system.	05	CO3	KL2																		
3	How does an operating system handle interrupts?	05	CO5	KL4																		
4	Explain the Shortest Job Next scheduling policy using the following set of processes. And calculate Avg. the waiting Time, TAT, CT, and normalized TAT.	05	CO2	KL6																		
	<table border="1"> <thead> <tr> <th>Processes</th> <th>P1</th> <th>P2</th> <th>P3</th> <th>P4</th> <th>P5</th> </tr> </thead> <tbody> <tr> <td>Admission Time</td> <td>0</td> <td>2</td> <td>3</td> <td>4</td> <td>8</td> </tr> <tr> <td>Service Time</td> <td>3</td> <td>3</td> <td>5</td> <td>2</td> <td>3</td> </tr> </tbody> </table>	Processes	P1	P2	P3	P4	P5	Admission Time	0	2	3	4	8	Service Time	3	3	5	2	3			
Processes	P1	P2	P3	P4	P5																	
Admission Time	0	2	3	4	8																	
Service Time	3	3	5	2	3																	
5	What are the different types of memory allocation techniques?	05	CO4	KL4																		
6	What is the difference between a process and a thread?	05	CO4	KL2																		
7	What is device management, and how does an operating system handle I/O operations?	05	CO5	KL2																		
Section C (Answer any THREE out of FIVE) – 30 Marks- (Each question Carry 10 Marks)		Q. No.	QUESTIONS	Marks	COs	KL																
8	Explain the Timesharing Operating System, multiprogramming operating system and Batch processing operating system concerning scheduling.	10	CO1	KL2																		
9	What is the important feature of the critical section? State the Reader writer's problem and give a solution using semaphore.	10	CO2	KL3																		
10	What are the conditions necessary for deadlock to occur in a computer system, and can you elaborate on how these conditions manifest in practice, including examples of resource allocation scenarios that illustrate the potential for deadlock? Additionally, how do operating systems typically detect and handle deadlock situations, and what strategies or algorithms are employed to prevent or mitigate dead-locks in systems?	10	CO3	KL5																		
11	Memory management is a critical aspect of operating systems, responsible for efficiently allocating and managing system memory to support concurrent	10	CO4	KL5																		

12	processes and ensure optimal system performance. Can you elaborate on the various techniques and mechanisms employed in modern operating systems for memory management, including but not limited to segmentation, paging, virtual memory, and memory protection? Additionally, discuss the challenges associated with memory management, such as fragmentation, thrashing, and memory leaks, and how operating systems address these challenges through algorithms and strategies like compaction, swapping, and memory allocation policies. Furthermore, provides examples of real-world scenarios where effective memory management is essential for system stability and performance, and explains how different memory management approaches impact overall system behaviour and resource utilization.	10	CO6	KL6
	What are the most common schemes for defining the Logical Structure of a Directory? Describe indexed file, indexed sequential file organization. Explain file system mounting and file sharing.			

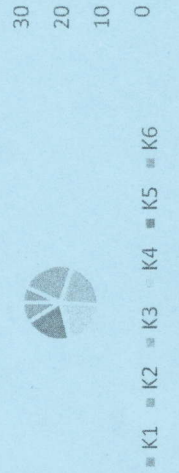
CO- Course Outcomes, **KL-** Knowledge Level, **PO – Program Outcome**

CO1	To acquire the fundamental knowledge of the operating system architecture and components
CO2	To know the various operations performed by the operating system
CO3	To Know about the Types of operating systems and differences among them
CO4	To Know about the Processes, threads, and the differences between the two
CO5	To Know about the Interrupts, synchronization, waiting, and atomic behaviour
CO6	To Know about the Virtual memory, paging, and memory allocation Caching principles and quantitative estimation of cache behaviour

GRAFICAL REPRESENTATION

Bloom's level wise Marks Distribution

Course Outcome wise Marks Distribution



375

18/6/24

EE



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Jharkhand



END SEM EXAMINATION
School of Engineering & IT

Program Bachelor of Computer Application		Semester II	
Subject Name Data Structure Through C		Year June 2024	
<p>Time: 3 Hour Max. Marks : 70</p> <ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s). 			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
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Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q. N 1	QUESTIONS	Marks	COs	KL
i	List the operations performed in Data Structure.	2	CO1	K2
ii	Differentiate between stack and queue.	2	CO4	K3
iii	Give the postfix form of $(A+B)*C/D$.	2	CO2	K1
iv	Explain Abstract data type.	2	CO1	K2
v	Define prefix and postfix expression.	2	CO3	K2
vi	Define one-dimensional and two-dimensional array.	2	CO1	K3
vii	Explain Push and Pop operation.	2	CO2	K1
viii	Define Queue.	2	CO4	K1
ix	What is the use of sorting in data Structure?	2	CO3	K3
x	What is binary search tree?	2	CO2	K2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What do you mean by Pointer? Explain with the help of an example.	05	CO1	K3
3	Convert X : (A+B)*D+E/ (F-G+D) into postfix form showing stack status after every step in tabular form.	05	CO3	K4
4	Write an algorithm to insert a node at the end of the singly linked list?	05	CO4	K5
5	Sort the list in ascending order using Insertion Sort 25,15,30,9,9920,26	05	CO3	K3
6	What is searching? Differentiate between Linear and Binary Search.	05	CO4	K4
7	Give the definition of a) Tree b) Root c) Binary Tree d) Complete binary tree	05	CO2	K5

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	What is Data Structure? Explain different types of Data structures with a neat diagram.	10	CO1	K1
9	Write an algorithm for insert and delete an element from queue. Write its applications also.	10	CO2	K3
10	Write a program to calculate the sum of all elements in an integer array. Differentiate between array and linked list.	10	CO3	K4
11	Define malloc (), Calloc (), and realloc () using suitable example.	10	CO4	K5
12	What is binary search tree? Construct tree for 20,18,23,8,14,45,70,82,15,38. Consider 20 as root node. Also write its equivalent postorder and preorder traversal.	10	CO4	K2

CO1	Different operation can be implemented in data structure.
CO2	Prefix to postfix stack can be done on any given expression.
CO3	Insertion or deletion of data using link list.
CO4	Any expression can be converted into tree structure.
CO5	Minimize the over use of traversing.

GRAFICAL REPRESENTATION

