

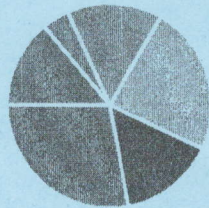
Single Copy

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

CO1	Apply the fundamental concepts of the operating systems (OS) for a given problem and discuss its performance issues.
CO2	Apply graph theory concepts to model OS problem and give valid conclusions.
CO3	Analyse the given problem and solve using OS management techniques.
CO4	Design algorithms for the given problem & compare its performance with existing ones.
CO5	Demonstrate the working of basic commands of Unix environment including file processing
CO6	Demonstrate the usage of different shell commands, variable and AWK filtering to the given Problem

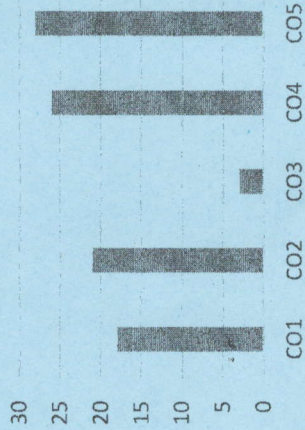
**GRAFICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

**Course Outcome Wise Marks Distribution**



29



**ARKAJAIN University**  
Jharkhand

**END TERM EXAMINATION**  
School of Engineering & IT

Branch	CS & IT	Program	MCA
Subject Name	Operating System with Linux	Semester	1st
		Year	2023/Odd
Time: 3 Hour	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of Mobile Phones or any kind of <u>Written Material, Arguments</u> with the <u>Invigilator</u> or <u>Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u></li> </ul>		
Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

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

Q.N1	QUESTIONS	Marks	COs	KL	PO
i	Define critical section?	2	CO1	K1	PO1
ii	Define semaphores.	2	CO2	K2	PO2
iii	What is free-space management?	2	CO2	K4	PO5
iv	Define race condition.	2	CO4	K5	PO6
v	Differentiate between process and threads	2	CO3	K3	PO4
vi	What is os user interface?	2	CO2	K3	PO3
vii	Explain simple batch system?	2	CO3	K2	PO2
viii	Explain virtual machines?	2	CO4	K3	PO1
ix	Describe distributed operating system?	2	CO3	K2	PO5
x	Explain about system calls?	2	CO3	K1	PO6



<b>Section B (Answer any FOUR out of SIX) - 20 Marks</b>					
<b>(Each question 5 Marks)</b>					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the major activities of an operating systems with regard to process management?	5	CO3	KL4	PO2
3	What are the requirements that a solution to the critical section problem must satisfy?	5	CO4	KL1	PO5
4	What is Vi editor? Explain various commands to use it.	5	CO2	KL2	PO6
5	What is the important feature of critical section? State the Readers Writers problem and give solution using semaphore	5	CO1	KL4	PO7
6	Differentiate local and global page replacement algorithm. Differentiate local and global page replacement algorithm.	5	CO3	KL3	PO9
7	What are different methods for handling deadlocks?	5	CO4	KL2	PO2

<b>Section C (Answer any THREE out of FIVE) - 30 Marks-</b>					
<b>(Each question Carry 10 Marks)</b>					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What is the important feature of critical section? State the Readers Writers problem and give solution using semaphore.	10	CO2	KL2	PO9
9	Explain about the following page replacement algorithms a)FIFO                      b)Optimal, c)LRU , With given reference string : - 5 0 2 1 0 3 4 3 0 3 2 1 3 0 1 5, with frame size as 3, Which one is the best page replacement algorithms?	10	CO3	KL4	PO7
10	Explain various communication-related commands in UNIX operating System? Also explain the following Commands, TOUCH, GREP, CAT, HEAD,TAIL, WH, RM,CUT,CHMOD, CP.	10	CO2	KL6	PO8
11	What are the requirements that a solution to the critical section problem must satisfy?	10	CO6	KL2	PO3

12	What is sleeping barber problem with multiple barbers? NOTES: - "The Sleeping Barber Problem is a classical synchronization problem that many of you may be familiar with or at least heard of. It's based on the premise that a barber (a thread) sleeps when there are no customers (each customer is a thread) in the waiting room (which is a semaphore)."	10	CO6	KL5	PO5
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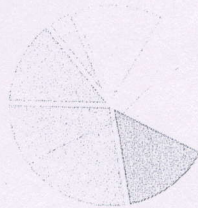


CO Course Outcomes, **KL- Knowledge Level,** **PO – Program Outcome**

CO1	The objective of the course is to help the students become the independent users of English language.
CO2	Students will acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3	Students will be able to understand spoken and written English language, particularly the language of their chosen technical field.
CO4	They will be able to converse fluently.
CO5	They will be able to produce on their own clear and coherent texts.

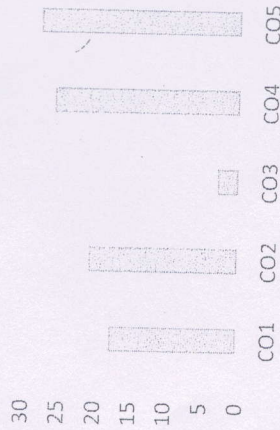
**GRAPHICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**



□ K1 □ K2 □ K3 □ K4 □ K5 □ K6

**Course Outcome Wise Marks Distribution**



**END TERM EXAMINATION**  
School of Engineering & IT

Branch	CS & IT	Program	MCA
Subject Name	Professional Communication	Semester	Ist
		Year	2023/Odd

Time: 3 Hour  
Max. Marks : 70

- 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 Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

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 Q1-x) - 20 Marks**

Q. N1	QUESTIONS	Marks	COs	KL	PO
i	What do you mean by Communication?	2	CO1	K1	PO2
ii	What do you mean by Weaver's model of communication?	2	CO4	K3	PO3
iii	What is Internal function?	2	CO5	K6	PO1
iv	What are the different seven communication?	2	CO2	K1	PO8
v	What is Verbal Communication?	2	CO2	K2	PO6
vi	What do you mean by Dissertation	2	CO3	K2	PO9
vii	What is the importance of Extempore?	2	CO1	K6	PO4
viii	What is a report?	2	CO5	K3	PO4
ix	What are the different modes of listening Skills?	2	CO2	K4	PO6
x	What is the main objective of Communication?	2	CO3	K3	PO3



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

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain the seven C's of Communication?	5	CO2	K2	PO2
3	How would you describe good/effective communication?	5	CO1	K5	PO5
4	Explain the structure of report and how Communication and writing skills plays an important role in preparing a report?	5	CO5	K6	PO9
5	What are the different nodes of Verbal and Non - Verbal Communication? Explain in details.	5	CO3	K1	PO3
6	Explain the format of Newsletters?	5	CO2	K4	PO8
7	What is the difference between Informational and Analytical Reports?	5	CO3	K2	PO7

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

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Can culture, gender, nationality or social class have an effect on communication? Explain in Detail.	10	CO2	K3	PO9
9	Write a letter to the Chairman of your Municipality, protesting about the unclean condition of your neighbourhood and requesting that he take appropriate action.	10	CO5	K5	PO4
10	Explain Technical Communication in Details.	10	CO5	K1	PO7
11	What is Do's and Don'ts of Group Discussion? What are the basics requirement of Interview?	10	CO1	K3	PO5
12	What is Press Release? Write the format of Press Release and give an example	10	CO4	K6	PO9

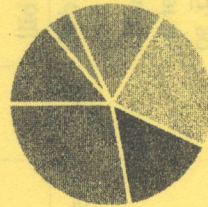


D- Course Outcomes, **KL- Knowledge Level,** **PO – Program Outcome**

CO1	Demonstrate the basic programming constructs of Java and OOP concepts to develop Java programs for a given scenario.
CO2	Illustrate the concepts of generalization and run time polymorphism applications to develop reusable components.
CO3	Exemplify the usage of Packages, Interfaces Exceptions and Multithreading in building efficient applications.
CO4	Apply Enumerations, Wrappers, Autoboxing, Collection framework and I/O operations for effective coding.
CO5	Implement the concepts of Applets, and networking using Java network classes for distributed applications

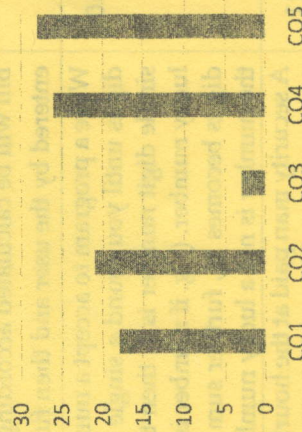
**GRAFICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

**Course Outcome Wise Marks Distribution**



**ARKAJAIN University**  
Jharkhand

**END TERM EXAMINATION**  
School of Engineering & IT

Branch	CS&IT	Program	MCA
Subject Name	Object Oriented Programming with Java	Semester	1st
		Year	2023/Odd
Time: 3 Hour	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u></li> </ul>		
Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

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

Q. N 1	QUESTIONS	Marks	COs	KL	PO
i	Explain about multiple threads.	2	CO1	K1	PO2
ii	Explain about notify All ()?	2	CO4	K4	PO5
iii	What is type conversion? Explain with the help of program.	2	CO3	K2	PO4
iv	What is Abstract Class?	2	CO5	K1	PO2
v	What is Interface?	2	CO2	K1	PO5
vi	What is parameterized constructor?	2	CO5	K2	PO7
vii	Explain about this Keyword.	2	CO8	K6	PO9
viii	Explain about if-else-if Ladder with the help of program.	2	CO5	K4	PO6
ix	What is the use of The Length () Method in java?	2	CO5	K2	PO8
x	What is the use of New operator in java?	2	CO3	K1	PO5



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

(Each question 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Differentiate between the concept of Method Overloading and Constructor Overloading in java with the help of program.	5	CO3	K4	PO2
3	Explain the concept of Interface with the help of program and also implement the concept of Runnable Interface.	5	CO4	K4	PO2
4	Write a program to enter two numbers and check whether they are co-prime or not.	5	CO7	K4	PO2
5	Write a program to input the basic salary of a person. He get 15% of the basic as HRA, 15% of the basic as Conveyance allowance and 10% of the basic as Entertainment allowance. The total salary is calculated by adding Basic + HRA + Conveyance + Entertainment Allowance. Calculate and print the total salary of person.	5	CO2	K2	PO2
6	What are the different ways through which string object is created in java? Explain with the help of program.	5	CO1	K3	PO2
7	What is the difference between StringBuffer and StringBuilder class?	5	CO5	K4	PO2

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

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	WAP to accept a number and check whether the number is perfect number or not. A number is called perfect number, if the sum of all factors (except number itself) of the number is equal to that number. (For e.g. 6 is a perfect number. Factors are 1, 2 & 3 and the sum is 1+2+3 = 6.)	10	K4	PO5	CO4
9	Define class calculateBill having member variable: calls, charge Member methods: void calCharge(int type) to calculate the telephone bill. Type is type of connection	10	K5	PO7	CO2

10	1. For domestic 2. For business Bill will be calculated according to the following rule- Monthly rent - Rs. 450 Number of call free - 100 Next 150 calls - Rs. 1/call Next 100 calls - Rs. 1.50/call Extra calls - Rs. 2/call for business type connection Rs 50/- will be paid extra by the customer void display() to show the bill amount Write main program to accept no. of calls and display menu 1. Domestic Connection 2. Business Connection Enter Your Choice (1 or 2) Bill will be calculated according to the option entered by the user and then finally display the bill. Write a program to accept a number and then add all digits until you found a single digit number. If that single digit number is 1, then that number is called lucky number. (e.g. if number is 2345 then sum of its digits becomes 14, further sum of this digits is 5, so the number is not a lucky number)	10	K5	PO9	CO3
11	A security man paid at the hourly rate (R) for the first 40 hours of work in a week. Thereafter, he is paid at 1.25 times of the hourly rate (R) for the next 16 hours and at 1.5 times of the hourly rate (R) for the further hours of work in the week. Taking the numbers of hours (H) and the rate per hour (R) as input, the weekly wages (W) is to be calculated.	11	K6	PO1	CO5
12	Explain the concept of exception handling with the help of this program where the sum of interior angles of polygon = (n - 2) x 180, where n = number of sides of the polygon. To enter number of sides of a polygon and find and display the sum of the interior angles of a polygon.	10	K2	PO2	CO6





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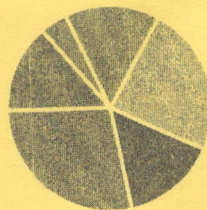
**END TERM EXAMINATION**  
School of Engineering & IT

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

CO1	Identify the suitable research methods and articulate the research steps in a proper sequence for the given problem.
CO2	Carry out literature survey, define the problem statement and suggest suitable solution for the given problem.
CO3	Analyze the problem and conduct experimental design with the samplings.
CO4	Perform the data collection from various sources segregate the primary and secondary data
CO5	Apply some concepts/section of Copy Right Act /Patent Act /Cyber Law/ Trademark to the given case and develop -conclusions

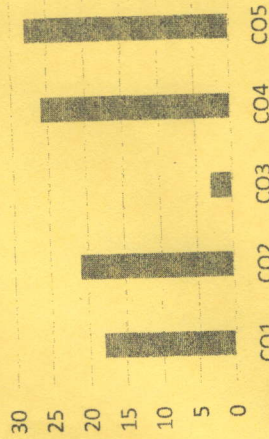
**GRAPHICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

**Course Outcome Wise Marks Distribution**



Branch	CS & IT	Program	MCA
Subject Name	Research Methodology and IPR	Semester	1st
		Year	2023/Odd
Time: 3 Hour Max. Marks :70	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; <b>don't Write on the 1st Page Backside</b></li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussing with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers.</u></li> </ul>		
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 Q1-x) – 20 Marks**

Q. N1	QUESTIONS	Marks	COs	KL	PO
i	What do you mean by sampling?	2	CO1	K1	PO2
ii	What do you mean by Research process?	2	CO4	K3	PO3
iii	What do you mean by 404 error plagiarism?	2	CO5	K6	PO1
iv	What is research ethics?	2	CO2	K1	PO8
v	Why research is important?	2	CO2	K2	PO6
vi	What is Research Problem?	2	CO3	K2	PO9
vii	What is data collection?	2	CO1	K6	PO4
viii	What is Remix Plagiarism?	2	CO5	K3	PO4
ix	What is a Report?	2	CO2	K4	PO6
x	What are the different types of IPR?	2	CO3	K3	PO3



**Section B (Answer any FOUR out of SIX) - 20 Marks****(Each question Carry 5 Marks)**

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	What are the qualities of good research? Explain in detail.	5	CO2	K2	PO2
3	What are the characteristics of good research problem?	5	CO1	K5	PO5
4	Differentiate between Research Method and Research Methodology in detail.	5	CO5	K6	PO9
5	What is research report? Explain the mechanics of writing a research report.	5	CO3	K1	PO3
6	What is sampling? What are the merits and demerits of Sampling?	5	CO2	K4	PO8
7	What are the problems encountered by researchers in India? What are the types of Intellectual property?	5	CO3	K2	PO7

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

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	What is IP? What are the types of IP? Explain in details.	10	CO2	K3	PO9
9	What are the types of Plagiarism? Explain each in Detail.	10	CO5	K5	PO4
10	How to broaden research area? Explain the ways of data collection and sources of data.	10	CO5	K1	PO7
11	What is Research problem? What are the methods of collecting primary data?	10	CO1	K3	PO5
12	What is case study? What are the criteria for evaluating adequacy of case study?	10	CO4	K6	PO9