ARKA JAIN University, Jharkhand — NAAC GRADE A, ACCREDITED UNIVERSITY			END SEM EXAMINATION School of Engineering & IT
Program	Master of Computer Application		
Subject Name	Internet of Things	Semester	III
		Year	Nov/Dec 2024
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 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
	K2 : Understanding	K4 : Analysing	K6 : Creating

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

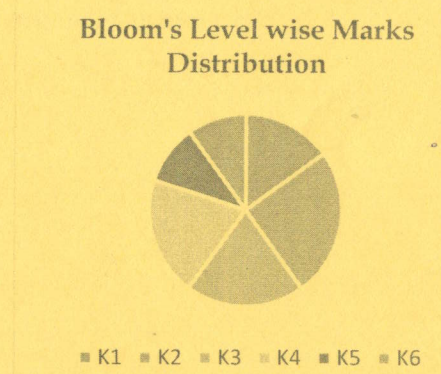
Q. N 1	QUESTIONS	Marks	COs	KL
i	What Bigdata collects?	02	CO1	K2
ii	What IoT collects?	02	CO1	K1
iii	Which requires data stream management?	02	CO2	K2
iv	Which requires Edge analytics?	02	CO2	K4
v	What is IoT Cloud?	02	CO4	K5
vi	How does the IOT device data organise?	02	CO3	K3
vii	Differentiate between IoT and M2M.	02	CO2	K3
viii	What is ZigBee protocol?	02	CO3	K2
ix	What do you mean by industry 4.0?	02	CO4	K3
x	What is an Arduino?	02	CO3	K6

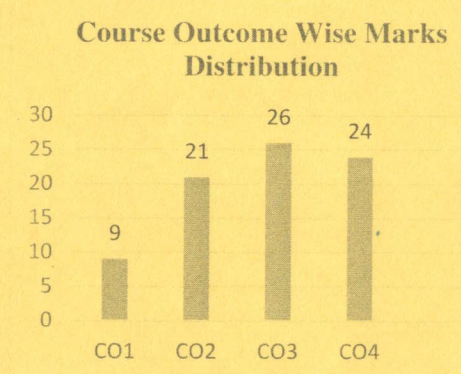
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	What are the hardware communication interfaces present in the Arduino board?	05	CO3	K4
3	What is the difference between IOT devices and embedded devices?	05	CO4	K1
4	What are the available wireless communications boards present in Raspberry Pi?	05	CO2	K2
5	Define Electronics, Sensors and Actuators in detail.	05	CO1	K4
6	What impacts will the Internet of Things (IoT) have on Energy Sector?	05	CO3	K3
7	What are the vital components of the Internet of Everything, (IOE)?	05	CO4	K1
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain why vitality utilization will be an issue when the Internet of Things is actualized?	10	CO2	K2
9	What is the Current Federal Regulatory Role of USA Government relevant to Internet Of Things (IoT)?	10	CO3	K4
10	How Lack of Uniform Technical Standards may influence the Development and Implementation of the Internet of Things (IoT)?	10	CO2	K6
11	How Energy Consumption may influence the Development and Implementation of the Internet of Things (IoT)?	10	CO4	K2
12	What impact will the Internet of Things (IoT) have on our day by day lives?	10	CO2	K5

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

Course Outcomes	CO1	Identify the use of IoT from a global context.
	CO2	Design application using IoT.
	CO3	Analyze the IoT enabling Technologies.
	CO4	Determine the real world problems and challenges in IoT.

GRAPHICAL REPRESENTATION





ARKA JAIN University, Jharkhand — NAAC GRADE A, ACCREDITED UNIVERSITY			END SEM EXAMINATION School of Engineering & IT
Program	Master of Computer Application		
Subject Name	Design and Analysis of Algorithm	Semester	III
		Year	Nov/Dec 2024
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 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
	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 do you mean by Pseudo code? Give an example.	02	CO1	K1
ii	Find the time complexity of the following expression: $T(n) = 2 + 0.005n + 0.055n\log n$	02	CO3	K3
iii	Give four examples of divide and conquer algorithm.	02	CO2	K2
iv	What is an algorithm? Explain with an example.	02	CO1	K2
v	What is time complexity of insertion sort in worst case?	02	CO2	K4
vi	The time complexity of binary search algorithm is_____.	02	CO1	K4
vii	What is the pivot element in quick sort?	02	CO3	K1
viii	What is the use of heapify function?	02	CO3	K2

ix	What is the time complexity of the following code:
	`void fun(int n)`
	`{`
	`  for (int i = 0; i <= n / 3; i++)`
	`  for (int j = 1; j <= n; j = j + 4)`
	`  printf("AJU");`
	`}`
		02	CO1	K5

x	Differentiate between BFS and space DFS.	02	CO4	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Define time and space complexity. Explain with examples.	05	CO1	K6
3	Illustrate Merge sort algorithm and discuss its time complexity.	05	CO2	K2
4	Simulate Quick sort algorithm for the following example: 6,4,9,7,5,8,4,2	05	CO2	K6
5	Explain in detail about asymptotic notations.	05	CO1	K2
6	Write in detail about Hamiltonian circuit problem. Give an example to it.	05	CO3	K5
7	Write a short note on Dijkstra's algorithm.	05	CO4	K3

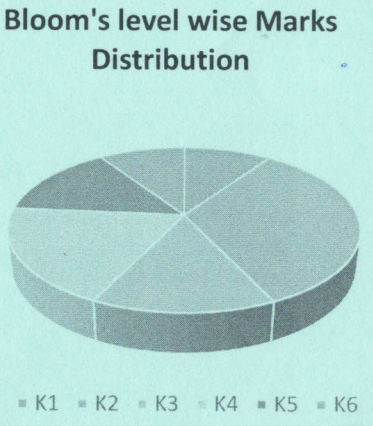
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

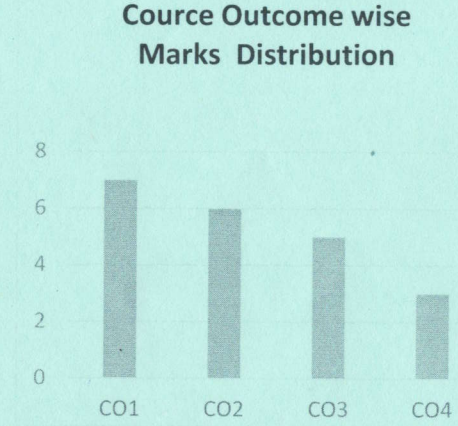
Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss in detail about the class P, NP, NP-hard and NP-complete problems. Give examples for each class.	10	CO4	K4
9	Describe Travelling Salesperson Problem (TSP) using Branch and Bound.	10	CO3	K4
10	What is Divide and Conquer algorithm? Explain it with the help of following data set. 44,33,11,55,77,90,40,60,99,22,88	10	CO2	K5
11	Differentiate between algorithm and pseudo code.	10	CO1	K2
12	Write the algorithm of insertion sort? Explain it with an example.	10	CO2	K3

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

Course Outcomes	CO1	Categorize problems based on their characteristics and practical importance.
	CO2	Develop Algorithms using iterative/recursive approach.
	CO3	Design algorithm using an appropriate design paradigm for solving a given problem.
	CO4	Classify problems as P, NP or NP Complete.

GRAPHICAL REPRESENTATION





ARKA JAIN University
Jharkhand

NAAC GRADE A
ACCREDITED UNIVERSITY

END SEM EXAMINATION
School of Engineering & IT

Program	Master of Computer Application		
Subject Name	Cloud Computing	Semester	III
		Year	Nov/ Dec 2024

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 comes 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 x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	What are the innovative characteristics of cloud computing?	2	CO1	K1
ii	Explain the cloud ecosystem	2	CO1	K2
iii	Describe the vision introduced by cloud computing?	2	CO1	K3
iv	Give the names of some popular software-as-a-service solutions?	2	CO1	K2
v	What are the major advantages of cloud computing?	2	CO1	K1
vi	What are the types of applications that can benefit from cloud computing?	2	CO4	K2
vii	What is Windows Azure?	2	CO3	K1
viii	Describe cloud computing services.	2	CO2	K2
ix	Distinguish between authentication and authorization.	2	CO2	K3
x	Discuss the security challenges in cloud computing.	2	CO4	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss the cloud computing reference model.	5	CO1	K3
3	List and discuss various types of virtualization?	5	CO4	K2
4	Give overview of applications of cloud computing?	5	CO3	K1
5	What is Amazon EC2? What types of services does it provide?	5	CO2	K2
6	With the help of diagram discuss virtualization of CPU, Memory, I/O Devices in detail.	5	CO4	K3
7	Discuss Grid Computing Versus Cloud Computing with the help of suitable example.	5	CO3	K2

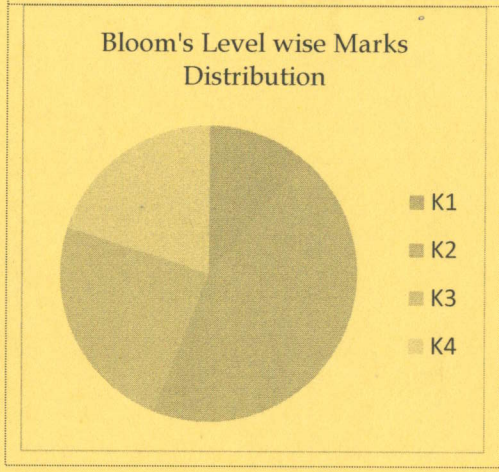
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

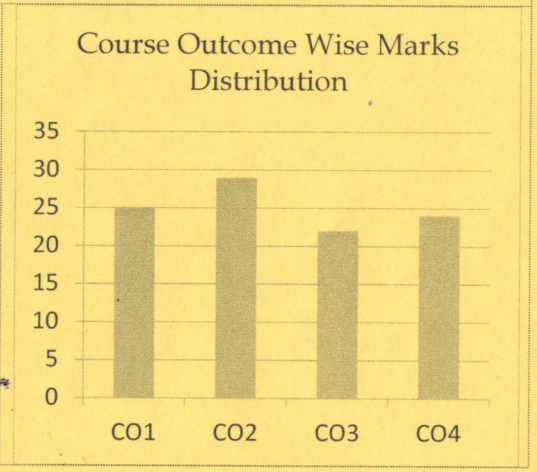
Q. No.	QUESTIONS	Marks	COs	KL
8	Give appropriate example for the techniques used in cloud computing for managing IT resources.	10	CO1	K3
9	Describe the working of Hadoop.	10	CO2	K2
10	Explain Virtual LAN (VLAN) and Virtual SAN. Give their benefits.	10	CO3	K4
11	In order to evaluate security risks which analysis must be performed on a cloud system? List out the areas of cloud that are more challenging while assessing security risks.	10	CO4	K4
12	Discuss PaaS application framework in detail.	10	CO2	K2

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

Course Outcomes	CO1	Understand the common terms and definitions of virtualization and cloud computing and be able to give examples.
	CO2	Comprehend the technical capabilities and business benefits of virtualization and cloud computing.
	CO3	Describe the landscape of different types of virtualization and understand the different types of clouds.
	CO4	Illustrate how key application features can be delivered more easily on virtual infrastructures.

GRAPHICAL REPRESENTATION





ARKA JAIN University, Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	END SEM EXAMINATION School of Engineering & IT

Program	Master of Computer Application		
Subject Name	Advanced Java	Semester	III
		Year	Nov/Dec 2024
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 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
	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	Write the full form of JPA and JTA	02	CO1	K1
ii	Name two types of Cookie?	02	CO1	K1
iii	What is session ID?	02	CO1	K2
iv	Give an advantage of JDBC?	02	CO2	K3
v	Name a protocol that is not stateless?	02	CO2	K4
vi	List out the different methods used in Session Tracking?	02	CO2	K2
vii	What is Request Dispatcher?	02	CO3	K4
viii	Write the Syntax for deleting the Cookie?	02	CO3	K2
ix	Write the syntax of a name directive in a regular JSP	02	CO4	K1
x	Give a benefit of EJB?	02	CO4	K1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
2	What are Servlets? What servlet can do?	05	CO1	K1
3	What is Cookie? List out the six parameters used in cookie?	05	CO2	K2
4	What are the disadvantage of the JSP page?	05	CO3	K3
5	What are the different types of EJB?	05	CO4	K2
6	How does JPA Work?	05	CO5	K4
7	Write short note on Java Servlet API?	05	CO1	K5
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
8	Explain the Servlet lifecycle	10	CO1	K1
9	What are the different standard action type present in JSP	10	CO2	K6
10	List out the different types of element present in the JSP	10	CO3	K4
11	What is JDBC Driver? Explain any two types of JDBC Driver?	10	CO4	K3
12	Explain the stateful session bean Lifecycle	10	CO5	K5

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

Course Outcomes	CO1	Apply the concept of Servlet and its life cycle to create web application
	CO2	Apply JSP tags and its services to web application.
	CO3	Create packages and interfaces in the web application context.
	CO4	Build Database connection for the web applications.
	CO5	Develop enterprise applications using Java Beans concepts for the given problem.

GRAPHICAL REPRESENTATION