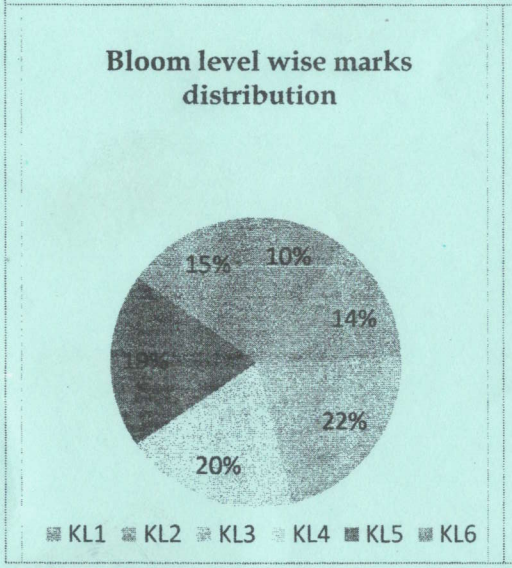
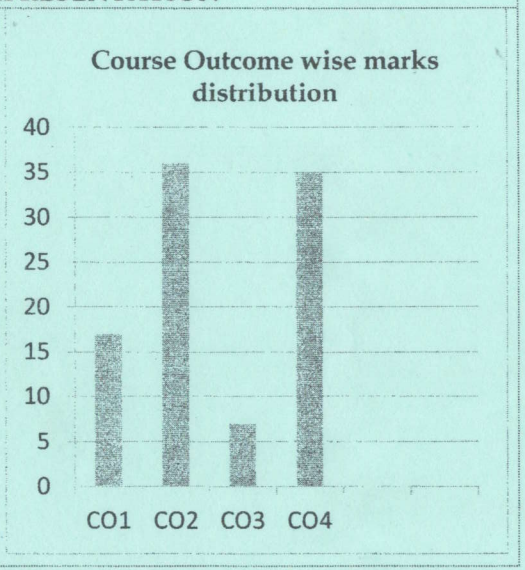
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Analyze the logic of a given problem
	CO2	Use branching control statements and iterative control statements
	CO3	Achieving Multiple inheritance using interface
	CO4	Applet and AWT to design application

GRAPHICAL REPRESENTATION





'M' 27/11

ARKA JAIN University Jharkhand — NAAC GRADE A

END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor of Computer Application		
Subject Name	Programming with 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	List 4 Features of Java.	02	CO1	KL1
ii	List out the tools in Java Development Kit.	02	CO3	KL3
iii	Print the pattern. 1 22 333 4444 55555	02	CO2	KL2
iv	What is garbage collection in java?	02	CO1	KL2
v	Define logical and relational operator.	02	CO1	KL3
vi	What is Application Program Interface?	02	CO1	KL2
vii	What is the difference between while and do-while statement?	02	CO2	KL4
viii	What is the use of exception handling?	02	CO1	KL3
ix	Write a program in java input 10 numbers using array and return the sum of numbers.	02	CO1	KL2
x	What is Abstract Window Toolkit?	02	CO2	KL5

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

Q. No.	QUESTIONS	Marks	COs	KL
2	With proper examples explain the control flow statements.	05	CO3	KL2
3	What is Interface? Write a Java program to illustrate the use of interface.	05	CO1	KL3
4	What is the difference between Method Overloading and Method Overriding?	05	CO2	KL5 KL6
5	With a neat diagram define the lifecycle of thread.	05	CO2	KL5 KL6
6	What is an applet? With the help of a diagram, explain the local and a remote applet?	05	CO4	KL3
7	Create an Employee class which has methods net Salary which would accept salary & tax as arguments & returns the net Salary which is tax deducted from the salary. Also it has a method grade which would accept the grade of the employee & return grade.	05	CO2	KL6 KL1

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Define Constructor and Its types? Write a program to illustrate the use of two types of constructor.	10	CO4	KL3 KL2
9	What is Inheritance and how does it help us to create new classes quickly. Define different forms of inheritance with examples.	10	CO2	KL4 KL1
10	Define the following Terms: a) Layouts b) Checkboxes and RadioButtons c) Labels and Buttons d) ScrollingList and ScrollBars e) Choice Menus	10	CO4	KL4 KL3
11	Define array and its type. Write a program in java to find the sum of rows and columns of a metrics using two dimensional arrays.	10	CO4	KL5 KL6
12	The Account class was defined to model a bank account. An account has the properties account number, balance, annual interest rate, and date created, and methods to deposit and withdraw funds. Create two subclasses for checking and saving accounts. A checking account has an overdraft limit, but a savings account cannot be overdrawn. Implement the classes. Write a test program that creates objects of Account, Savings Account, and Checking Account and invokes their toString() methods.	10	CO2	KL4 KL5

JGi ARKA JAIN University Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY			END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application		
Subject Name	Design and Analysis of Algorithms	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 is the time complexity of Max-Min problem in worst case?	02	CO2	K2
ii	What do you mean by the optimal solution?	02	CO1	K5
iii	What do you mean by Pseudo code? Give an example.	02	CO1	K2
iv	The time complexity of quick sort algorithm is_____.	02	CO2	K4
v	What is time complexity of Insertion sort in best case?	02	CO3	K4
vi	Kruskal's algorithm is used to find____.	02	CO1	K1
vii	Differentiate between BFS and DFS.	02	CO4	K1
viii	What is greedy method?	02	CO2	K2
ix	What is a chromatic number in the concept of graph coloring?	02	CO2	K3
x	What is the Order of Algorithm?	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	Write the algorithm of insertion sort? Explain it with an example.	05	CO3	K6
3	What is Time complexity? Explain Big O with an example considering two algorithms.	05	CO2	K2
4	Differentiate between algorithm and pseudo code.	05	CO1	K1
5	What is minimum spanning tree? What are the properties of minimum spanning tree?	05	CO4	K6
6	Simulate Quick sort algorithm for the following example: 6,4,9,7,5,8,4,2	05	CO5	K5
7	What is graph coloring? Explain it with help of an example.	05	CO5	K3

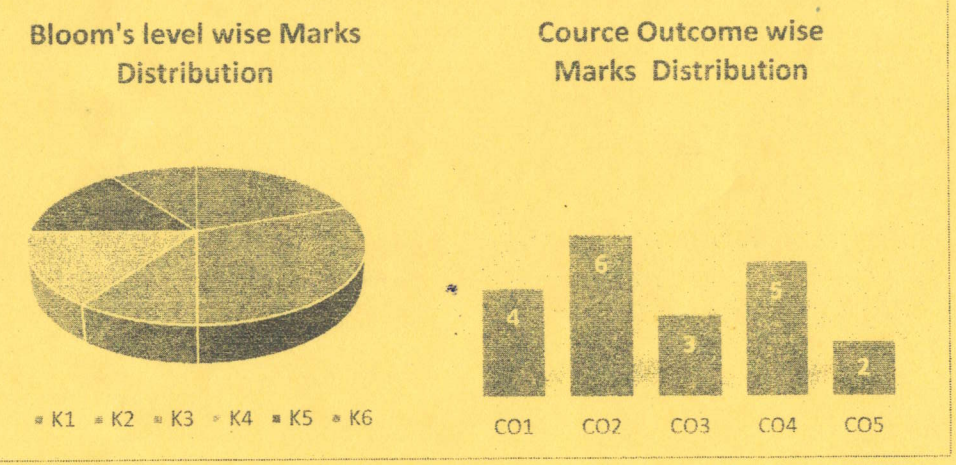
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	What is asymptotic notation? Classify and explain. Solve the function and find out theta, omega and big-oh F(n) = 3n+2	10	CO2	K1
9	Explain the following graph traversal (a) Depth First search (b) Breath First search.	10	CO4	K5
10	Explain Prim's Algorithm. Explain with an example and also find the Minimum Cost Spanning Tree.	10	CO4	K3
11	What is the Min Max problem? Explain it with the help of the following example. 33,11,55,77,90,40,60,99	10	CO3	K2
12	Explain the binary search algorithm considering one example and write the algorithm for it.	10	CO5	K4

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

Course Outcomes	CO1	Design algorithms for a given problem using standard algorithm design techniques.
	CO2	Define the concepts and mathematical foundation for analysis of algorithm.
	CO3	Analyze and compare the efficiency of various algorithms of a given problem
	CO4	Explain different standard algorithm design techniques, namely, divide & conquer, greedy, dynamic programming, backtracking and branch & bound.
	CO5	Demonstrate standard algorithms for fundamental problems in Computer Science.

GRAFICAL REPRESENTATION

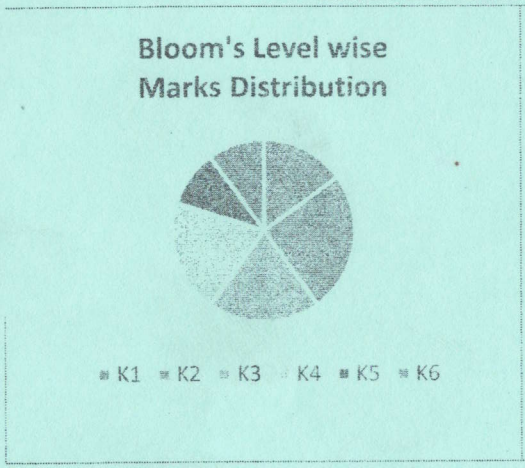


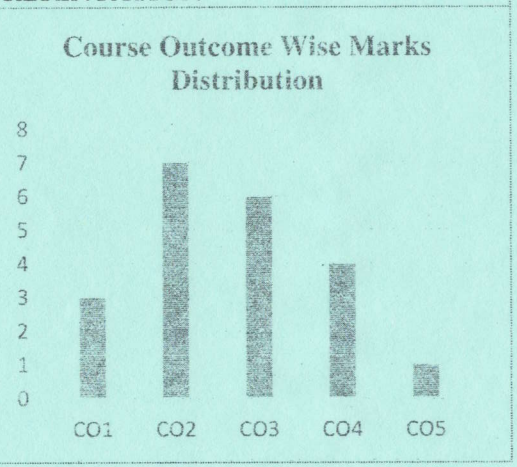
'M' 2/12

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

Course Outcomes	CO1	To understanding Describe the fundamental elements of relational database management systems
	CO2	To understanding Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra, and SQL.
	CO3	To understanding the Design ER-models to represent simple database application scenarios
	CO4	To understanding the Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
	CO5	To understanding the Improve, the database design by normalization.

GRAPHICAL REPRESENTATION





ARKA JAIN University
Jharkhand
NAAC GRADE A

END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor of Computer Application		
Subject Name	Database Management System	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 is Data abstraction?	02	CO1	K2
ii	What is Schema?	02	CO1	K1
iii	What is Relational Database?	02	CO2	K2
iv	What is the database?	02	CO2	K4
v	Define the "integrity rules"	02	CO4	K5
vi	What is Data Independence?	02	CO3	K3
vii	What is Relational Algebra?	02	CO2	K3
viii	What is a view?	02	CO3	K2
ix	What is a multi-valued attribute?	02	CO4	K3
x	What is database recovery?	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	Explain Functional dependency and Trivial functional dependency with examples	05	CO3	KL4
3	What is a foreign key constraint, and how does it enforce referential integrity in a relational database?	05	CO4	KL1
4	What are the anomalies occur due to interleaving execution (concurrent transactions)? Explain them with an example.	05	CO2	KL2
5	Discuss the advantages and disadvantages of using stored procedures in a database system.	05	CO1	KL4
6	Explain how the group by clause works. What is the difference between Where and Having clauses? Explain with an example each.	05	CO3	KL3
7	Explain Functional dependency and Trivial functional dependency with examples.	05	CO4	KL1

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain how concurrency can lead to inconsistency. What is a deadlock? Can it occur in a serializable schedule? If so, give an example. How can it be detected and resolved?	10	CO2	KL2
9	Describe the process of normalization in database design. Provide examples of each normal form (1NF, 2NF, 3NF) and explain how they help in reducing data redundancy and ensuring data integrity. Discuss the trade-offs involved in achieving higher normal forms.	10	CO3	KL4
10	Design an ER diagram for keeping track of information about an AIRLINE database taking into account at least six entities.	10	CO2	KL6
11	Explain the challenges of concurrency control in database systems and the different concurrency control mechanisms used to ensure data consistency. Compare and contrast optimistic and pessimistic concurrency control strategies, highlighting their strengths and weaknesses in different scenarios. Furthermore, discuss transaction management in a DBMS, including isolation levels, ACID properties, and transaction logging.	10	CO5	KL2
12	a: Define a conceptual data model and explain its purpose in the database design process. b. Discuss the key components of a conceptual data model, such as entities, attributes, and relationships. c. Provide an example of a conceptual data model for a university management system, identifying relevant entities, attributes, and relationships.	10	CO2	KL5

'M' 4/12

ARKA JAIN University Jharkhand | NAAC GRADE A

END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor of Computer Application		
Subject Name	Python Programming	Semester	III
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • **Answer all Questions of Section A (Compulsory)** • **Answer Any <u>Four out of Six of Section B</u>** • **Answer Any <u>Three out of Five of Section C</u>** • **Possession of <u>Mobile Phone</u>** or any kind of **<u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u>** will comes under **<u>Unfair Means</u>** and will **<u>Result</u>** in the **<u>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 Python and what are its key features?	02	CO1	K1
ii	How can you import a module in Python?	02	CO2	K2
iii	What is PEP 8?	02	CO1	K1
iv	Write down the difference between a list and a tuple in Python.	02	CO4	K2
v	What are different functions in Python?	02	CO2	K1
vi	What are the main data types in Python?	02	CO1	K2
vii	What is String?	02	CO1	K1
viii	What is in operator in Python?	02	CO2	K2
ix	Define dictionary in Python.	02	CO1	K1
x	How can you concatenate two lists in Python?	02	CO1	K1

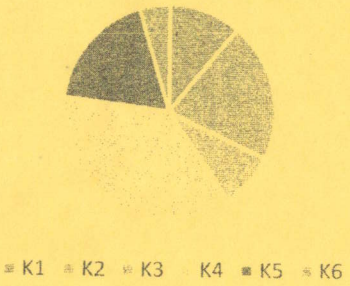
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	What do you mean by Operator in python? Explain about any five operators in python with appropriate examples.	05	CO1	K2
3	Explain any two feature of Object Oriented Programming with the help of programs.	05	CO3	K2
4	What is Recursion? Explain with the help of a program in Python.	05	CO2	K5
5	What is a Keyword? Does keywords can be used as a function? Write in brief about any five keywords in Python.	05	CO2	K2
6	Is String in Python immutable? (Yes/No)Explain with the help of an example	05	CO4	K3
7	What is the difference between del () and remove () methods of list?	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	What do you mean by a Function in python programming? Write a program in Python to calculate the length of a String. Explain about fruitful functions & void function with suitable examples.	10	CO2	K3
9	How to declare constructor method in Python? Explain with the help of an Example.	10	CO3	K3
10	What is a Loop? What are the different loop control statements used in python? Explain with the help of programs.	10	CO3	K3
11	What do you mean by a Key Value pair in Dictionaries? How will you get all the keys from the dictionary? How to access the values in a dictionary? Explain with an example.	10	CO5	K4
12	What is List? What do you mean by slicing of a List? Explain with the help of example. How to convert a String into a List with the help of in built functions in Python?	10	CO1	K4

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

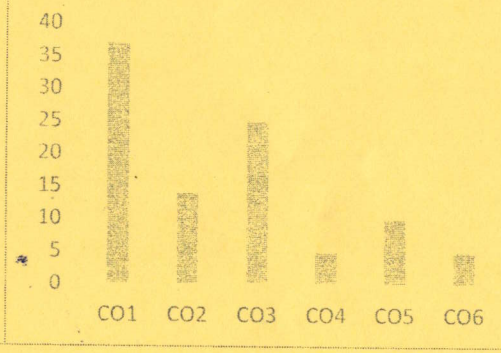
Course Outcomes	CO1	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
	CO2	Express different Decision Making statements and Functions
	CO3	Interpret Object oriented programming in Python
	CO4	Understand and summarize different File handling operations
	CO5	Explain how to design GUI Applications in Python and evaluate different database operations
	CO6	Design and develop Client Server network applications using Python

GRAPHICAL REPRESENTATION

Blooms Level wise marks Distribution



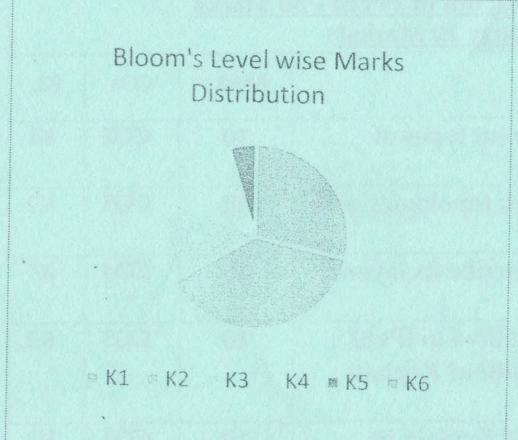
Course Outcomewise Marks Distribution

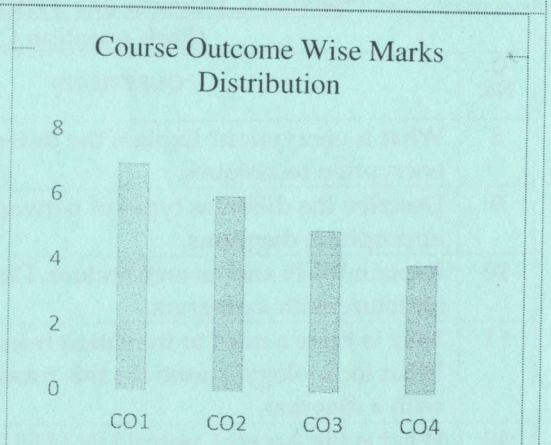


CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	Analyze the topologies and network models.
	CO2	Understand the various network protocols, algorithms. Multiplexing, Error Detention, and Data Link Control
	CO3	Analyze the Network Layer and Next Generation IP, Data-Link and Network-Layer Protocols.
	CO4	Understand about the Wired Networks and Virtual LANs

GRAPHICAL REPRESENTATION





M 6/12

ARKA JAIN University
Jharkhand
NAAC GRADE A
ACCREDITED UNIVERSITY

END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor Of Computer Application		[BACKLOG]
Subject Name	Data Communication & Networking	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 is Data Encryption Standard (DES)? a) block cipher b) stream cipher c) bit cipher d) none of the mentioned	2	CO1	K1
ii	In HTTP pipelining, a) multiple HTTP requests are sent on a single TCP connection without waiting for the corresponding responses b) multiple HTTP requests cannot be sent on a single TCP connection c) multiple HTTP requests are sent in a queue on a single TCP connection d) none of the mentioned	2	CO4	K2
iii	The main reason for the transition from IPv4 to IPv6 is: a) Huge number of systems on the internet b) Very low number of systems on the internet c) Providing standard address d) None of the mentioned	2	CO1	K3
iv	High-speed Ethernet works on: a) coaxial cable b) twisted pair cable c) optical fiber	2	CO1	K2

	d) none of the mentioned			
v	The Domain Name System (DNS) is maintained by: a) distributed database system b) a single server c) a single computer d) none of the mentioned	2	CO1	K1
vi	The entire hostname has a maximum of: a) 255 characters b) 127 characters c) 63 characters d) 31 characters	2	CO1	K2
vii	MAC address is of: a) 24 bits b) 36 bits c) 42 bits d) 48 bits	2	CO2	K1
viii	In cryptography, what is a cipher? a) algorithm for performing encryption and decryption b) encrypted message c) both algorithm for performing encryption and decryption and encrypted message d) none of the mentioned	2	CO1	K2
ix	Application layer offers _____ service. a) End to end b) Process to process c) Both End to end and Process to process d) None of the mentioned	2	CO4	K3
x	Transport layer aggregates data from different applications into a single stream before passing it to: a) network layer b) data link layer c) application layer d) physical layer	2	CO3	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the structure of the IPv4 header and draw its frame format.	5	CO4	K2
3	Describe different types of network devices used for interfacing, such as routers, switches, and hubs.	5	CO3	K1
4	What is PPP (Point-to-Point Protocol)? Draw and describe its frame structure.	5	CO2	K2
5	Illustrate the 7-layer OSI model and explain the function of each layer.	5	CO3	K3
6	What is Frequency Division Multiplexing (FDM)? Classify and explain its types.	5	CO2	K2
7	Difference between UDP and TCP?	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	What is encryption? Explain the different types of encryption techniques.	10	CO2	K1
9	Describe the different types of network topologies with appropriate diagrams.	10	CO3	K2
10	Explain Wi-Fi and its architecture. Describe its layered structure with a diagram.	10	CO4	K1
11	Why is there a need to transition from IPv4 to IPv6? What technology is used for this transition? Explain with a diagram.	10	CO3	K2
12	What is the Access Control List (ACL)? Explain its types and usage in networking.	10	CO1	K3