

CENTRAL UNIVERSITY OF RAJASTHAN

CENTRE FOR DISTANCE & ONLINE EDUCATION

Department of Computer Science

End Semester Examinations, Session 2025-26 (1st Semester)

Programme : M.Sc. (CS)
 Course Code : 6.0ODLCSC01
 Course Title : Introduction to Artificial Intelligence
 Course Credit : 4

Semester : 1
 Maximum Marks : 70
 Time Allowed : 3 Hrs
 Total Printed Pages :

Instructions to Candidates: (If required)

1.

Q.No.		Marks																		
1.	Consider trying to solve the 8-puzzle using hill climbing. Can you find a heuristic function that makes this work? Make sure it works on the following example: <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>8</td><td>5</td><td>6</td></tr> <tr><td>4</td><td>7</td><td></td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td></td></tr> </table> StartGoal	1	2	3	8	5	6	4	7		1	2	3	4	5	6	7	8		[10]
1	2	3																		
8	5	6																		
4	7																			
1	2	3																		
4	5	6																		
7	8																			
	OR																			
	Explain AO* algorithm with a suitable example. State the limitations in the algorithm?	[10]																		
2.	Explain the drawback of steepest ascent hill climbing technique.	[10]																		
	OR																			
	A four-gallon and a three-gallon jug are handed to you. It has no sign of any measurement markings. The jugs may be filled with water using the pump. In a 4-gallon container, how may precisely two gallons of water be added? Explain the problem's state space. Provide its operator sequences to solve this problem.	[10]																		
3.	Do you agree with the Chinese Room argument that if a computer passes the Turing Test, then it does not prove that the computer is intelligent? State your reasons.	[10]																		
	OR																			
	When would best-first search be worse than simple breadth-first search? Explain with proper example.	[10]																		
4.	Give an example of a problem for which breadth-first search would work better than depth-first search.	[10]																		
	OR																			
	How heuristic search is different from uninformed search? Explain why it is a good heuristic to choose the variable that is most constrained, but the value that is least constraining in a CSP search.	[10]																		

5.	Define the State space for the following problem and solve them as state space search? Rules for solution can be assumed. The Wolf-Goat-Cabbage Problem: Description: - A farmer with his wolf, goat and cabbage come to the edge of a river, they wish to cross. There is a boat at the river's edge but, of course, only the farmer can row. The boat also can carry only two things (including the rower) at a time. If the wolf is ever left alone with the goat, the wolf will eat the goat; similarly, if the goat is left alone with the cabbage, the goat will eat the cabbage. Devise a sequence of crossing of the river so that all four characters arrive safely on the other side of the river.	[10]			
	OR				
	Write an algorithm to describe "depth first search" procedure along with merits and demerits. How is it different from Depth First Iterative Deepening (DFID) search? What will be the time and space complexity of DFID search?	[10]			
6.	Show how means-ends analysis could be used to solve the problem of getting from one place to another. Assume that the available operators are walk, drive, take the bus, take a cab, and fly.	[10]			
	OR				
	Given the following statistics, what is the probability that a woman has cancer if she has a positive mammogram result? (i) One percent of women over 50 have breast cancer. (ii) Ninety percent of women who have breast cancer test positive on mammograms. (iii) Eight percent of women will have false positives.	[10]			
7.	Explain constraint satisfaction problem. Also solve below mention Cryptarithmic problem. Constraints: • No two letters have the same value. • Each letter appearing more than must have same value. • No beginning letters of a word can be zero. <table><tr><td>COCA</td></tr><tr><td>+COLA</td></tr><tr><td>OASIS</td></tr></table>	COCA	+COLA	OASIS	[10]
COCA					
+COLA					
OASIS					
	OR				
	Solve the given question using CSP method also mention all the steps of the CSP algorithm. Constraints: • No two letters have the same value. • Each letter appearing more than must have same value. • No beginning letters of a word can be zero. <table><tr><td>DONALD</td></tr><tr><td>+GERALD</td></tr><tr><td>ROBERT</td></tr></table>	DONALD	+GERALD	ROBERT	[10]
DONALD					
+GERALD					
ROBERT					

CENTRAL UNIVERSITY OF RAJASTHAN
CENTRE FOR DISTANCE & ONLINE EDUCATION
Department of Computer Science

End Semester Examinations, Session 2025-26 (ODD Semester)

Programme : M.Sc.	Semester : I
Course Code : 6.0ODLCSC02	Maximum Marks : 70
Course Title : Advanced Algorithms	Time Allowed : 3 Hrs
Course Credit : 4	Total Printed Pages : 02

Instruction to candidates:

All questions are compulsory. Each question carries equal marks.

Q.No.	Marks
1. Define algorithm. What are the characteristics of an algorithm? Explain in detail.	[10]
OR	
Compare time and space complexity. What do you understand by the best-case and worst-case complexity of an algorithm? Write the best-case and worst-case complexity for the linear search algorithm.	[10]
2. What is the Divide and Conquer strategy? List the steps involved in Divide and Conquer strategy.	[10]
OR	
Show the process of quick sort by taking an example. Derive and solve recurrence equation for the best-case behaviour of the quick sort.	[10]
3. What is Dynamic programming approach? Explain matrix chain multiplication problem with a suitable example.	[10]
OR	
Define Greedy method. List the characteristics of Greedy approach. Explain Kruskal's algorithm with an example.	[10]
4. What is the backtracking approach? Explain the terms- Bounding function, State space tree, Live node, and E-node. State the 4-queen problem and solve it by using a backtracking approach.	[10]
OR	
Differentiate between backtracking and branch and bound methods. State the 0/1 Knapsack problem, give an example, and solve it using the branch and bound approach.	[10]
5. What do you mean by string-matching? Explain Rabin-Karp algorithm for string matching. What is its worst-case running time?	[10]
OR	
What is a binomial tree? What are the properties of binomial heaps? Discuss operations performed on binomial heaps with complexity analysis.	[10]
6. Give formal definitions for complexity measures- Theta (θ), Omega (Ω) and big oh (O). Solve the following recurrence equation using iteration method:	[10]

$$T(n) = \begin{cases} a & n = 1 \\ 2T\left(\frac{n}{2}\right) + cn, & n > 1, \end{cases} \quad a \text{ and } c \text{ are constants.}$$

OR

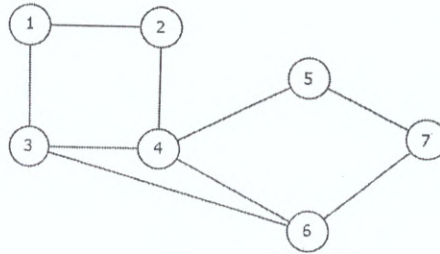
Explain the master method for solving recurrences. Use the master method to solve the following recurrence equation: [10]

$$T(n) = 8T\left(\frac{n}{2}\right) + cn^2$$

7. Differentiate between Las Vegas and Monte Carlo algorithms. Write a randomized algorithm for primality testing. [10]

OR

What do you mean by an approximation algorithm? Why do we need approximation algorithms? State vertex-cover problem. Find an approximate solution for the vertex-cover problem in the following graph. [10]



CENTRAL UNIVERSITY OF RAJASTHAN

CENTRE FOR DISTANCE & ONLINE EDUCATION

Department of Computer Science

End Semester Examinations, Session 2025-26 (I Semester)

Programme : M.Sc. Computer Science
Course Code : 6.0 ODLCS03
Course Title : Advanced Python Programming
Course Credit :4

Semester : I
Maximum Marks : 70
Time Allowed : 3 Hrs
Total Printed Pages : 2

Instructions to Candidates: All questions are compulsory.

- | Q.No. | | Marks |
|-------|--|-------|
| 1. | Discuss the use of Python IDLE and describe the steps involved in developing, debugging, and executing a Python program. | [10] |
| | OR | |
| | Write a Python program to check whether a given string is a palindrome and count the number of vowels, consonants, digits, and special characters present in the string. | [10] |
| 2. | Explain object initialization and constructor overloading concepts in Python with suitable examples. | [10] |
| | OR | |
| | Write a Python program to demonstrate single inheritance and multilevel inheritance. Explain the execution flow of the program. | [10] |
| 3. | Write a Python program to perform file and directory operations with proper exception handling. Explain the purpose of each operation used in the program. | [10] |
| | OR | |
| | Explain various file handling methods available in Python with suitable examples. | [10] |
| 4. | Explain the advantages of Python packages. Develop a Python package containing multiple modules and explain its structure and implementation. | [10] |
| | OR | |
| | Create a user-defined module containing arithmetic functions and write a Python program to demonstrate its use. | [10] |
| 5. | Explain the use of SQLite Manager for database creation and management. Illustrate the process with suitable examples. | [10] |
| | OR | |
| | Design a GUI-based Student Information System using Python. Explain the GUI components, event handling mechanisms, and working of the application. | [10] |
| 6. | Explain the role of Python in data analysis and machine learning. Discuss the major | [10] |

libraries and their applications in these domains.

OR

Discuss the applications of NumPy, Pandas, Matplotlib, and Seaborn in a machine learning workflow with suitable examples. **[10]**

7. Explain the major features of Python that make it suitable for developing large-scale software applications. Discuss the contribution of object-oriented programming, modules, packages, file handling, and exception handling. **[10]**

OR

Discuss the design and development of a Python-based application by highlighting the role of data structures, object-oriented programming, modules, file handling, and exception handling. **[10]**

CENTRAL UNIVERSITY OF RAJASTHAN

CENTRE FOR DISTANCE & ONLINE EDUCATION

Department of Computer Science

End Semester Examinations, Session...2025-26.....(...Ist..... Semester)

Programme : M.Sc.Computer Science
Course Code :6.0ODLCSC04
Course Title : Professional Communication
Course Credit :02

Semester : 1
Maximum Marks : 70
Time Allowed : 3 Hrs
Total Printed Pages : 01

Instructions to Candidates: All questions are compulsory.

Q.No.		Marks
1.	What is Creative writing? What qualities one should have for Creative writing?	[10]
	OR	
	What is Clause? Write its types with an example.	[10]
2.	What is the format of a report? Give an example.	[10]
	OR	
	Explain Group discussion with its techniques.	[10]
3.	What are the barriers of Speaking? Mention at least ten points to highlight the same.	[10]
	OR	
	What is Tense? Discuss its types and subtypes in detail with an example.	[10]
4.	What is paragraph writing? Explain the principles of paragraph writing with an example.	[10]
	OR	
	What is Phrase? Write its types with an example.	[10]
5.	What is Active listening? Discuss the barriers of Active listening and how to overcome those barriers?	[10]
	OR	
	Explain Writing Skills and its types in detail.	[10]
6.	What steps can be taken for planning and preparing successful presentation? Explain in detail with example.	[10]
	OR	
	Discuss the importance of Reading skills and its types in detail.	[10]
7.	What is Sentence? Write its types with examples.	[10]
	OR	
	Explain the importance of Interview skills and how to prepare for interview?	[10]

CENTRAL UNIVERSITY OF RAJASTHAN

CENTRE FOR DISTANCE & ONLINE EDUCATION

Department of Computer Science

End Semester Examinations, Session 2025-26 (1st Semester)

Programme : M.Sc. (CS)
Course Code : 6.00DLCSC12
Course Title : Internet of Things (IoT)
Course Credit : 3

Semester : 1
Maximum Marks : 70
Time Allowed : 3 Hrs
Total Printed Pages : 2

Instructions to Candidates: (If required)

1.

Q.No.		Marks
1.	What are the logical design entities used in IoT?	[10]
	OR	
	Why is the design of the gateway, communication module, and device hardware for IoT necessary?	[10]
2.	Which software elements are necessary to create an Internet of Things application?	[10]
	OR	
	How does an RFID identity communicate, and how is it used for IoT applications?	[10]
3.	Describe an example of an IoT service that uses a publish-subscribe communication model.	[10]
	OR	
	Describe an example of an IoT service that uses WebSocket-based communication.	[10]
4.	Assume an IoT sensor dataset with the following attributes: temperature, pressure, wind speed, rpm, energy output & timestamp. Write Python code to perform some fundamental statistical analysis on the above dataset.	[10]
	OR	
	Describe the concept of IoT data analytics and its importance in business.	[10]
5.	Discuss the security and privacy concerns associated with collecting & analyzing IoT data.	[10]
	OR	
	Discuss various data analytics tools & techniques used in IoT applications.	[10]

6.	Discuss the role of Python Panda's library for data manipulation. Write code to perform the following operation using pandas. (i) Read and print the contents of a CSV file. (ii) Select a single column from the data frame. (iii) Filter data based on any condition. (iv) Aggregate data. (v) Merge two data frames.	[10]
	OR	
	Discuss the issues of scaling up the software for large-scale IoT devices.	[10]
7.	What is M2M communication? Justify the statement with an illustrative scenario: "IoT is much more than M2M communication."	[10]
	OR	
	Compare fixed assignment and demand assignment MAC protocols with suitable examples.	[10]

CENTRAL UNIVERSITY OF RAJASTHAN
CENTRE FOR DISTANCE & ONLINE EDUCATION
Department of Computer Science

End Semester Examinations, Session 2025-26 (ODD Semester)

Programme : M.Sc.
Course Code : 6.0ODLCSC15
Course Title : Distributed Systems
Course Credit : 3

Semester : I
Maximum Marks : 70
Time Allowed : 3 Hrs
Total Printed Pages : 02

Instruction to candidates:

All questions are compulsory. Each question carries equal marks.

- | Q.No. | Marks |
|---|-------|
| 1. Discuss the relative advantages and disadvantages of the various commonly used models for configuring distributed computing systems. Which model do you think is going to become the most popular model in future? Give reasons for your answer. | [10] |
| OR | |
| Describe the naming problem in distributed systems and discuss different naming schemes and name resolution methods. | [10] |
| 2. Describe blocking and nonblocking types of IPC (Inter-Process Communication). Which is easier to implement and why? Discuss their relative advantages and disadvantages. | [10] |
| OR | |
| Explain the Remote Procedure Call (RPC) mechanism with a detailed diagram and discuss its advantages and limitations. | [10] |
| 3. Compare the performance implications of monolithic kernels and microkernels in large-scale systems. | [10] |
| OR | |
| What are the major issues in designing a distributed operating system? In the microkernel approach for designing a distributed operating system, what are the primary tasks that the kernel must perform? | [10] |
| 4. Why are election algorithms normally needed in a distributed system? Explain the Bully algorithm for electing a coordinator with the help of a suitable example. What will happen in the Bully algorithm when two or more processes almost simultaneously discover that the coordinator has crashed? | [10] |
| OR | |
| Differentiate between PRAM (Pipelined Random Access Memory) consistency and processor consistency models with suitable example. | [10] |
| 5. What is a deadlock? What are the four necessary conditions for a deadlock to occur? Prove that the presence of a cycle in a general resource allocation graph is a necessary but not a sufficient condition for the existence of deadlock. | [10] |
| OR | |
| Assume that in a system there are total 8 units of a resource for which four processes P1, P2, and P3 are competing. Suppose the maximum units of the resource required by P1, P2, and P3 are 4, 5, | |

and 6 respectively, and they are currently holding 2, 2, and 2 units of resource respectively. Find out whether the current state of the system is safe or unsafe. If it is safe, enumerate all the safe sequences. [10]

6. In what aspects is the design of a distributed file system different from that of a file system for a centralized time-sharing system? Explain the desirable features of a good distributed file system. [10]

OR

What is an immutable file? Can a file system be designed to function correctly by using only immutable files? If no, explain why. If yes, explain how the basic file operations (create, read, write, delete) can be performed in this file system for shared files. [10]

7. Discuss the working mechanism of CORBA with a neat diagram illustrating client-server interaction. [10]

OR

Compare ext2 and ext3 file systems.

[10]



Central University of Rajasthan

Center for Distance and Online Education (CDOE)

Dear Learner,

Greetings from the CDOE!

As you are aware, every student enrolled in the ODL Programme is required to write and submit assignments for each course. These assignments form an important component of the continuous assessment and carry **30% weightage** of the overall grade for each course.

Please carefully note the following instructions:

General Instructions

1. Please remember to attach the designated cover page on every assignment you submit. The format of cover page is attached for your reference.
2. All sections of the assignment are compulsory in nature. All questions are to be attempted, except for those where options are provided.
3. Please write the answer mentioning the correct corresponding question number given in the assignment.
4. Please write on continuous pages and number each page.
5. All assignments should be handwritten. Typed or printed assignment will not be accepted.
6. it is strongly recommended to keep a copy (photocopy or scanned) of the assignment sent by you for your record.
7. **The last date for submitting assignments is 10.06.2026.** Submission of assignments is required to appear in the End Semester Examination.
8. Assignments can be deposited at CDOE, Curaj or sent through post to **Director, Centre for Distance and Online Education (CDOE), Room 102, Administration Building, Central University of Rajasthan, Bandarsindari, District: Ajmer – 305817, Rajasthan.**

Director

Centre for Distance and Online Education (ODL & OP)



राजस्थान केन्द्रीय विश्वविद्यालय Central University of Rajasthan

Assignment

Open and Distance Learning Programme

Learner's Name :
Enrollment Number :
Academic year and Session :
Programme Name and Code :
Course Code :
Course Title :
.....

Learner's Signature

Centre for Distance and Online Education (CDOE)

Room 102, Administration Building, Central University of Rajasthan

N.H. 8, Bandarsindari, District: Ajmer – 305817, Rajasthan

Website: www.curaj.ac.in | Email: cdoe@curaj.ac.in | Phone : 01463 257 556

Central University of Rajasthan

Centre for Distance and Online Education

Open and Distance Learning Programme

Assignment

Programme Name: M.Sc (Computer Science)

Programme Code: ODLMSCS

First Semester

Instructions:

1. In the M.Sc (Computer Science) programme, two assignments have been planned for the continuous evaluation of the learner in each course.
2. The learner can appear in the term-end examination of the concerned course only after completing both assignments and submitting them within the stipulated time period.
3. Each assignment carries 15 marks. Thus, a total of 30 marks are allocated for assignments for each course.
4. The assignments must be written in the learner's own handwriting. Typed or printed assignments will not be accepted.
5. The learner should complete the sessional assignments within the stipulated time and send them by post or submit them in person at the following address:

Address for Submission of Sessional Assignments:

**Director, Centre for Distance and Online Education (CDOE), Room - 102,
Administration Building, Central University of Rajasthan, Bandarsindari, Jaipur –
Ajmer highway, District - Ajmer – 305817, Rajasthan.**

Title of the Course: Introduction to Artificial Intelligence

Course Code: 6.0 ODL CSC01

Assignment: 01

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 What is Artificial Intelligence? [1]

Q. 02 Define state space in AI. [1]

Q. 03 What are the applications of AI in real life ? [1]

Q. 04 What is a greedy best-first search algorithm ? [1]

Q. 05 State Bayes' Theorem. [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Differentiate between **Informed** and **Uninformed** Search techniques. [5]

Q. 02 Explain the working of **A* Search Algorithms**. [5]

- I. Define the evaluation function.
- II. Explain admissibility and optimality.
- III. Give one example where A* is preferred over other algorithms.

Assignment: 02

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 What is the goal of the **Minimax Algorithm**? [1]

Q. 02 Define branching factor in search algorithms. [1]

Q. 03 What is a **Hidden Markov Model** (HMM)? [1]

Q. 04 Define hill climbing and mention one drawback. [1]

Q. 05 Define uncertainty in AI. [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Compare the following search strategies based on time complexity , space complexity, completeness, and optimality : [5]

- I. Breadth First Search (BFS)
- II. Depth First Search (DFS)

Q. 02 Explain **Alpha-Beta Pruning** in adversarial search. [5]

- I. How it improves efficiency of Minimax
- II. Provide an example tree illustration
- III. Discuss time complexity improvement.

Title of the Course: Advanced Algorithms
Course Code: 6.0 ODL CSC02
Assignment: 01

Maximum Marks: 15

Short Answer type Questions:(attempt all Questions)

(Word Limit: 60 - 80)

- Q. 01** Define the **Divide and Conquer** strategy. [1]
- Q. 02** What is the key idea behind **Dynamic Programming**? [1]
- Q. 03** What is a randomized algorithm for primality testing? [1]
- Q. 04** State fractional Knapsack problem.. [1]
- Q. 05** Define **backtracking**. [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

- Q. 01** Compare the following algorithm design paradigms: [5]
- I. Divide and Conquer
 - II. Greedy Method
 - III. Dynamic Programming
- Q. 02** Explain the **0/1 Knapsack problem** and its solution using **Dynamic Programming**. [5]

OR

Show the process of quick sort by taking an example. Derive and solve recurrence equations for the best-case behaviour of the quick sort.

Assignment: 02

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

- Q. 01** What is the order of a B-Tree? [1]
- Q. 02** What is the maximum number of children a node can have in a B-Tree of order m?[1]
- Q. 03** Define time and space complexity. What do you understand by the Best-case and Worst-case complexity of an algorithm? [1]
- Q. 04** What do you mean by string-matching? [1]
- Q. 05** What is a feasible solution? [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Compare **Backtracking** vs **Branch and Bound**.

[5]

Q. 02 Solve the following recurrence relation using the **Master Theorem**:

$$T(n) = 8T(n/2) + n^2$$

[5]

AND

Obtain a set of optimal Huffman codes for the messages (m1, m2, m3, m4, m5, m6) with relative frequencies (q1, q2, q3, q4, q5, q6) = (45, 13, 12, 16, 9, 5). Draw the decode tree for this set of codes. Also write time complexity for Huffman encoding.

Title of the Course: Advanced Python Programming

Course Code: 6.0 ODL CSC03

Assignment: 01

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

- Q. 01** What is **IDLE** in Python? [1]
- Q. 02** What is the difference between a class variable and an instance variable? [1]
- Q. 03** Given the string `text = "Python Programming"`, what will be the output of the slice `text[7:14]`? Explain how slicing works. [1]
- Q. 04** Define polymorphism. Give a simple example of how the `+` operator exhibits polymorphic behavior. [1]
- Q. 05** What is the primary difference between a **NumPy Array** and a **Pandas Series** regarding the indexing of data? [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

- Q. 01** Create a Python class named `Student` that includes: [5]
- A. A constructor to initialize a name and a list of three marks.
 - B. A method named `calculate_average()` that returns the average of the marks.
 - C. An instance method to display the student's name and their calculated average.
- Q. 02** Design a simple management system for a Library by following the requirements below. Ensure your code follows proper Python indentation and naming convention [5]
- A. Define a class named `Book`. Implement a constructor to initialize the following attributes: `title`, `author`, and a private attribute named `__price`.
 - B. Within the `Book` class, write an instance method (e.g., `show_info()`) that prints the title, author, and price of the book.
 - C. Create a subclass named `Textbook` that inherits from the `Book` class. Add a new attribute specifically for this subclass called `subject`.
 - D. Create an object (instance) of the `Textbook` class with sample data. Use this object to call the display method created in part (B).

Assignment: 02

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

- Q. 01** What are the different flow control statements available in Python? Explain with a suitable example. [2]
- Q. 02** Write a Python program to check whether a given string is a palindrome. [2]
- Q. 03** What is a key-value pair in a Python dictionary? How would you add, update, and delete key-value pairs from a dictionary? [2]
- Q. 04** What are Python data types? Briefly describe any four common data types in python with examples. [2]
- Q. 05** Write a program that takes any two lists, L1 and L2, and adds their elements to form a new list L3, whose elements are sums of the corresponding elements in L1 and L2. For instance, if L= [3,1,4,-2] and M= [1,5,9,3], then N should equal (4,6,13,1). [2]

Long Answer type Questions: (attempt all Questions)

- Q. 01** Write a Python program to create the following pattern of numbers using while loop.

```
5
5 4
5 4 3
5 4 3 2
5 4 3 2 1
```

[5]

OR

Describe the strip(), split (), and join () string methods in Python. Write a short Python program using each of these methods.

Title of the Course: Internet of Things(IoT)

Course Code: 6.0 ODL CSC12

Assignment: 01

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 What is IoT (Internet of Things)? [1]

Q. 02 What is data aggregation? [1]

Q. 03 What is a Wireless Sensor Network (WSN)? [1]

Q. 04 What is the Zigbee **protocol** used for? [1]

Q. 05 What is **routing** in WSN? [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Discuss the architecture and communication protocols of IoT. [5]

A. Components of IoT

B. Explain any two protocols such as MQTT, Zigbee, or RPL

C. Applications of IoT

Q. 02 Discuss various types of sensors used in IoT and their real-world applications. [5]

Assignment: 02

Maximum Marks: 15

Short Answer type Questions:(attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 What is latency in networks ? [1]

Q. 02 Define QoS (Quality of Service). [1]

Q. 03 What is collision avoidance ? [1]

Q. 04 What is the publish-subscribe model ? [1]

Q. 05 What is multi-hop communication ? [1]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Discuss the multi-layered architecture of IoT and explain the role of key communication protocols at each layer. [5]

Q. 02 Analyze the different routing strategies used in Wireless Sensor Networks (WSN), specifically focusing on data-centric, hierarchical, and location-based approaches. [5]

Title of the Course: Distributed Systems

Course Code: 6.0 ODL CSC15

Assignment: 01

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 Define a Distributed System. Explain its key characteristics with suitable example.[2]

Q. 02 What is inter-process communication (IPC) ? [2]

Q. 03 Explain the concept of Remote Procedure Call (RPC) and its basic operation steps. [2]

Q. 04 What is a Thread, and how does it differ from a process? [2]

Q. 05 Define Concurrency Control in distributed file systems. [2]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Explain the various Architectural Models of Distributed Systems in detail. [5]

Assignment: 02

Maximum Marks: 15

Short Answer type Questions: (attempt all Questions)

(Word Limit: 60 - 80)

Q. 01 Define Virtualization and its importance. [2]

Q. 02 What is deadlock detection in distributed systems ? [2]

Q. 03 Explain distributed file systems and their features. [2]

Q. 04 Explain Sun NFS architecture. [2]

Q. 05 Discuss concurrency control and recovery. [2]

Long Answer type Questions: (attempt all Questions)

(Word Limit: 300 - 400)

Q. 01 Compare the NTFS, ext2, and ext3 file systems and discuss their key Characteristics, Advantages, and Limitations. [5]

Title of the Course: Professional Communication

Course Code: 6.0 ODL CSC04

Assignment: 01

Maximum Marks: 15

Long Answer type Questions: (attempt any 3)

(Word Limit: 300 - 400)

[5*3 = 15]

Q. 01 What is the format of a report? Give an example.

Q. 02 What is phrase? Write its types with an example.

Q. 03 Explain Group discussion with its techniques.

Q. 04 What is Creative writing? What qualities one should have for Creative writing

Q. 05 What is Active Listening? Discuss the barriers of Active listening.

Assignment: 02

Maximum Marks: 15

Long Answer type Questions: (attempt any 3)

(Word Limit: 300 - 400)

[5*3 = 15]

Q. 01 What is Clause? Write its types with an example.

Q. 02 What are the barriers of Speaking?.

Q. 03 What is paragraph writing? Explain the principles of paragraph writing?.

Q. 04 Explain Writing Skills and its types.

Q. 05 What steps can be taken for planning and preparing a successful presentation?