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Daffodil International University

Faculty of Science & Information Technology

Department of Computing and Information System

Final Examination, Fall-2025

Course Code: CIS121, Course Title: Introduction to Industry 4.0

Level: 1 Term: 1

Exam Duration: 2 Hours **Marks: 40**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	*a)*	**State** the historical background of the 4th Industrial Revolution.	[2×4 =8]	CLO1
	b)	**Briefly** describe any two applications of AI in modern industrial systems.		
	c)	**List** two limitations of implementing AI in Industry 4.0.		
	d)	**Mention** two reasons why cloud services are important in advanced manufacturing.		
2.	**Department of CIS** is planning to build an automated medical project named **"Niramoy"** to remotely monitor patients' health using wearable sensors and smart medical devices that measure heart rate, blood pressure, oxygen saturation, glucose levels, and body temperature. The collected data is transmitted to a centralized system where it is securely stored, processed, and analyzed to provide real-time insights for patient care. Doctors and caregivers can access this information through a web or mobile platform, receiving alerts, dashboards, and notifications about abnormal readings, medication schedules, and potential health risks. By integrating the data-gathering devices with the centralized management system, Niramoy enables timely interventions, personalized treatment plans, and better management of chronic diseases. This approach reduces the need for frequent hospital visits, improves patient outcomes, optimizes resource use, and allows healthcare providers to monitor multiple patients simultaneously while keeping sensitive data secure, creating a smart and efficient healthcare ecosystem.			
	a)	**Identify** which technology can be used for "Niramoy" to remotely monitor patients' health and explain its benefits.	[4]	
	c)	**Explain** a suitable method for analyzing patient health data to help doctors make timely and effective treatment decisions.	[4]	

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2. **i. Create two lists in Python:**

food_items = ["Burger", "Pizza", "Biryani", "Fries", "Sandwich", "Pasta", "Hotdog", "Donut", "Fried Chicken", "Ice Cream"]

calories = [500, 600, 700, 300, 250, 550, 400, 350, 800, 200]

ii. Apply the following calorie-based health category policy:

Calories ≥ 800 → "Very High Calorie"

Calories 700–799 → "High Calorie"

Calories 500–699 → "Moderate Calorie"

Calories 400–499 → "Slightly Low Calorie"

Calories < 400 → "Low Calorie"

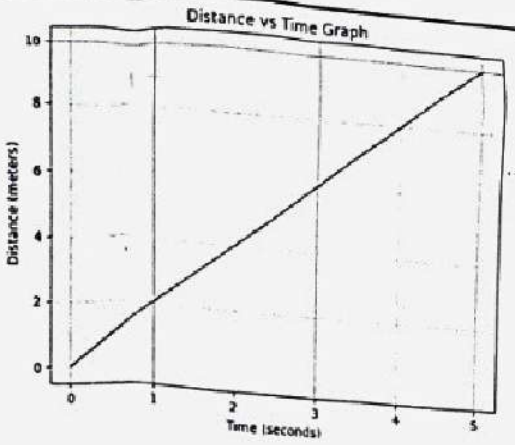
CLO2

a)	**Write** a python program to implement the above-mentioned calorie-based health category policy.	[5]
b)	**Remove** food items from both lists that fall under the **'Very High Calorie'** and **'High Calorie'** categories and print the updated lists.	[4]
c)	**Explain** different sequence slicing techniques used in python.	[3]

3.

Months	Dhaka	Chittagong	Khulna	Sylhet
January	19	22	21	18
February	21	23	23	20
March	25	26	26	24
April	28	28	29	27
May	30	29	31	29
June	30	28	31	28
July	29	27	30	28
August	29	27	30	28
September	28	27	29	27
October	26	26	27	25
November	23	24	24	22
December	20	23	22	19

[Figure-1]



[Figure-2]

Here, Figure-1 shows the month-wise temperatures of cities and Figure-2 shows the "Distance vs Time Graph".

Now answer the following questions-

CLO3

a)	**Use** the appropriate python library to create and display the DataFrame shown in Figure-1.	[5]
b)	**Implement** the graph shown in Figure-2 using a suitable python library.	[5]
b)	**Calculate** the average temperature of Dhaka city.	[2]