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Daffodil International University

Faculty of Science & Information Technology

Department of Computing and Information System

Final Examination, Summer-2026

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** two features of Artificial Intelligence (AI) in Industry 4.0.	[2×5 =10]	**CLO1**
	b)	**Mention** two major benefits of Industry 4.0 in modern industries.		
	c)	**Name** three types of Cloud Computing used in Industry 4.0.		
	d)	**Briefly** describe the role of Big Data in modern industries.		
	e)	**Identify** any two essential components of an IoT system.		
2.		**"Green Field Agro Farm"** is developing a smart agricultural monitoring system to improve crop management and reduce water wastage. The farm uses IoT sensors installed across the farmland to continuously collect information such as soil moisture, temperature, humidity, and water levels. The collected data is transmitted through a wireless network to a cloud-based technology, where it is stored and processed. Farmers can access the information through a mobile application and monitor field conditions remotely. The system can also generate alerts when soil moisture falls below a certain level. Based on the received information, farmers can take timely actions such as starting or stopping irrigation.		**CLO2**
	a)	**Name** two types of IoT sensors that can be used in the above-mentioned system.	[2]	
	b)	**Explain** how IoT and Cloud Computing work together in the above-mentioned system.	[4]	
	c)	**Describe** the benefits of using IoT and Cloud Computing in the agricultural farm.	[4]	
3.		**"Sheba Healthcare"** is developing an intelligent healthcare system to improve patient care and hospital management. The system collects large amounts of data from electronic health records, medical reports, diagnostic images, laboratory results, wearable devices, and patient monitoring systems. The collected data is stored and analyzed to identify health patterns and support hospital management. The system can also analyze patient information to predict potential health risks, assist in disease diagnosis, and provide recommendations to doctors.		**CLO2**
	a)	**Identify** the two appropriate technologies for the above-mentioned system.	[2]	

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	b)	**Explain** how a large volume of healthcare data is generated from various healthcare sources.	[4]	
	c)	**Describe** how the system can support disease prediction and diagnosis.	[4]	
4.		**"Electro Mart BD"** wants to develop an automated system to manage customer purchases and calculate discounts. The store records customer details, purchase information, and the quantity of items purchased. The discount is determined according to the following policy: • *Purchase amount 10,000 BDT or more → 15% discount* • *Purchase amount 5,000–9,999 BDT → 10% discount* • *Purchase amount below 5,000 BDT → 5% discount* The store has recorded the following purchase information:		**CLO3**

Customer	Product	Quantity	Purchase Amount (BDT)
Hasib	Laptop	1	25000
Shihab	Headphone	4	8000
Nabila	Keyboard	3	4000
Rakib	Monitor	1	10500

Now answer the following questions-

a)	Use Pandas library to create and display the given customer purchase information.	[3]	
b)	**Construct** a Python function to calculate the final payable amount using the purchase amount and discount rate.	[4]	
b)	**Utilize** the Matplotlib library to visualize the purchase amount, discount amount.	[3]	

