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Daffodil International University

Faculty of Science & Information Technology

Department of Computing and Information System

Final Examination, Spring-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)*	**Mention** any two applications of AI in real-world systems.	[2×5 =10]	**CLO1**
	b)	**Briefly** describe the historical background of the 3rd Industrial Revolution.		
	c)	**List** two limitations of using Cloud Computing in Industry 4.0.		
	d)	**State** two benefits of IoT in Industry 4.0.		
	e)	**Write** two roles of robotics in smart manufacturing.		
2.	Department of CIS, DIU has developed an AI-based learning platform called **"AI Professor"** to enhance teaching and learning experiences. The system is designed to improve the overall academic process and support both teachers and students in a digital environment. It aims to make learning more effective, flexible, and student-centered. To support this platform, Cloud Computing is also used as a key technology.			**CLO2**
	a)	**Define** Artificial Intelligence (AI) and mention its types.	[3]	
	b)	**Explain** how Artificial Intelligence is applied in the "AI Professor" platform.	[3]	
	c)	**Describe** the benefits of using Cloud Computing in "AI Professor" platform.	[4]	
3.	Dhaka North City Corporation (DNCC) has introduced a smart transport system to improve traffic management and public transportation. The system collects a large amount of real-time data about traffic and vehicles every day. This real-time data is stored and analyzed using a technology called Big Data. It helps to understand traffic conditions and find busy and free routes. It also helps the authorities manage traffic better, reduce traffic jams, and improve transport services for people.			**CLO2**
	a)	**Which** technology will be suitable for collecting the real-time data for DNCC.	[2]	
	b)	**Explain** the process of collecting real-time data for the above mentioned system.	[4]	
	c)	**Describe** how Big Data is generated in transportation systems.	[4]	

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4.	**Durbar Cricket Academy** is analyzing the performance of 3 players over 5 matches. The runs scored by each player in each match are recorded in the following table:
	
	`  Match ID  Azizul  Jubayer  Rizan`
	`0  Match-1  78  45  32`
	`1  Match-2  40  56  70`
	`2  Match-3  85  25  60`
	`3  Match-4  33  72  48`
	`4  Match-5  50  60  28`
	
	Figure-1
	
	The academy coach wants to analyze player performance by classifying each run value according to the following performance rules:
	• If runs are 70 or above, performance is "Excellent."
	• If runs are 50–69, performance is "Good."
	• If runs are 30–49, performance is "Average."
	• If runs are below 30, performance is "Needs Improvement."
	
	Now answer the following questions-
				CLO3

	a)	**Formulate** a Python program for the above performance rules.	[4]	
	b)	**Implement** a Pandas DataFrame using the given table with appropriate column names.	[4]	
	b)	**Find** the average runs scored by "Azizul" from Figure-1.	[2]	