



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]	

2.	i. Create two lists in Python: <pre>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]</pre> ii. Apply the following calorie-based health category policy: Calories $\geq 800 \rightarrow$ "Very High Calorie" Calories 700–799 $\rightarrow$ "High Calorie" Calories 500–699 $\rightarrow$ "Moderate Calorie" Calories 400–499 $\rightarrow$ "Slightly Low Calorie" Calories $< 400 \rightarrow$ "Low Calorie"	CLO2																																																																	
	a) Write a python program to implement the above-mentioned calorie-based health category policy. b) Remove food items from both lists that fall under the 'Very High Calorie' and 'High Calorie' categories and print the updated lists. c) Explain different sequence slicing techniques used in python.	[5] [4] [3]																																																																	
3.	<table><tr><th>Months</th><th>Dhaka</th><th>Chittagong</th><th>Khulna</th><th>Sylhet</th></tr><tr><td>January</td><td>19</td><td>22</td><td>21</td><td>18</td></tr><tr><td>February</td><td>21</td><td>23</td><td>23</td><td>20</td></tr><tr><td>March</td><td>25</td><td>26</td><td>26</td><td>24</td></tr><tr><td>April</td><td>28</td><td>28</td><td>29</td><td>27</td></tr><tr><td>May</td><td>30</td><td>29</td><td>31</td><td>29</td></tr><tr><td>June</td><td>30</td><td>28</td><td>31</td><td>28</td></tr><tr><td>July</td><td>29</td><td>27</td><td>30</td><td>28</td></tr><tr><td>August</td><td>29</td><td>27</td><td>30</td><td>28</td></tr><tr><td>September</td><td>28</td><td>27</td><td>29</td><td>27</td></tr><tr><td>October</td><td>26</td><td>26</td><td>27</td><td>25</td></tr><tr><td>November</td><td>23</td><td>24</td><td>24</td><td>22</td></tr><tr><td>December</td><td>20</td><td>23</td><td>22</td><td>19</td></tr></table> Distance vs Time Graph	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	CLO3
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	[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-																																																																		
	a) Use the appropriate python library to create and display the DataFrame shown in Figure-1. b) Implement the graph shown in Figure-2 using a suitable python library. b) Calculate the average temperature of Dhaka city.	[5] [5] [2]																																																																	