



Class Test-1, Summer 2025

Course Code: C1S121, Course Title: Introduction to Industry 4.0

Time: 25 Minutes

Marks: 15

- 12
- 4
- What was the major advancement in the Second Industrial Revolution?  
(a) Automation and cyber-physical systems (b) Mass production using electricity  
(c) Introduction of steam-powered machines (d) Digital transformation and AI
  - Which of the following is NOT a core technology of Industry 4.0?  
(a) Artificial Intelligence (b) Steam Power (c) Cloud Computing (d) Internet of Things (IoT)
  - What is a major characteristic of Industry 4.0?  
(a) Use of steam engines in production (b) Automation with minimal human intervention  
(c) Mass production without digitalization (d) Dependence on manual labor for all tasks
  - Autonomous robots can be used in which core technology?  
(a) Smart Logistics (b) Industrial Simulations (c) Remote Monitoring (d) Predictive Analysis
  - Which of the following is the main feature of the Third Industrial Revolution?  
(a) Steam Power (b) Electricity (c) Automation (d) Artificial Intelligence

6. Explain the different data types available in Python. How do variables work in Python? Illustrate with examples. [4]

Ans: There are many types available in python. Below they are:

1. Numeric type : int →  
float →  
complex →

2. Text type : str →

3. Boolean type : bool →

4. Sequence type : list [1, 2, 3], tuple (1, 2, 3), range(10, 3)

5. Set types : set {1, 2, 3}, frozenset

6. Mapping type : dict

7. None type : None

7. A manufacturing company wants to upgrade its traditional production line to a smart factory under Industry 4.0 principles.

Explain how Artificial Intelligence (AI) can facilitate this transformation. Provide a specific example of AI application in this context [6]

Artificial Intelligence can facilitate this transformation by Big data analytics and AI using.

1. Data analyze:

- \* Smart factory analyze collect data and analyze

2. IT and OT convergence

- \* IT (Information technology)

- \* OT (Operational technology)

In smart factory

4 3. Customized production:

- \* Smart factory allows for customized production

- \* Products can be processed customized based

- \* With out slow process smart factory processed

- \*

4. Connected supply chain

- \* Smart factory connects the customer real time.



Marks:

Department of Computing and Information System (CIS)

Class Test-2, Summer 2025

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

Time: 25 Minutes

Marks: 15

Name:

ID:

Section:

Date:

1. What will be the output of the following codes:

[2.5 × 2]

```
a) def multiply(x, y=2):  
    result = x * y  
    return result  
a = multiply(5)  
b = multiply(3, 4)  
print("A:", a)  
print("B:", b)
```

Output:

```
b) total = 0  
for i in range(1, 6):  
    if i % 2 == 0:  
        total += i  
  
print("Total:", total)
```

Output:

Handwritten calculation for the second code block. It shows a list of numbers 1 through 5, with 2, 4, and 6 crossed out. The sum of the remaining numbers (1, 3, 5) is calculated as 1+2+3+4+5=15, and then 15-2-4-6=3. The final result is 3.

2. Differentiate between a Python list and a tuple with examples.

[4]

3. Write a Python program to determine movie ticket price based on age using the following rules: [6]

- i.  $\text{Age} < 3 \rightarrow \text{No ticket needed}$
- ii.  $\text{Age} \leq 12 \rightarrow 100 \text{ Taka}$
- iii.  $\text{Age } 13\text{--}17 \rightarrow 150 \text{ Taka}$
- iv.  $\text{Age } 18\text{--}59 \rightarrow 200 \text{ Taka}$
- v.  $\text{Age} \geq 60 \rightarrow 120 \text{ Taka}$

**Sample Input: 24**

**Output: 200 Taka**



Marks:

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Class Test-3, Summer 2025

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

Time: 30 Minutes

Marks: 15

Name:

ID:

Section:

Date:

1. Create a Pandas DataFrame using the following student data:

[5]

Student_ID	Name	ISE	Industry	DBMS
1001	Abid	85	78	92
1002	Kabir	76	85	88
1003	Sakib	90	92	95
1004	Muhit	82	80	87

- Write Python code to create this DataFrame.
- Display the DataFrame.

2. Explain the advantages of using cloud services over on-premise systems.

[4]



3. A large agricultural farm wants to improve crop yield and reduce water usage. Sensors are placed in the soil to measure moisture levels, temperature, and nutrient content. Drones fly over the fields to capture images of crop health. The data is sent to a central system, which automatically controls irrigation and fertilization systems, and alerts the farmers if any area needs attention.

Explain how the data from these devices can be collected and used to improve crop yield and resource efficiency. [6]