

Class XI – Artificial Intelligence

Assignment 1-3 Solutions

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SECTION - Assignment 1

Artificial Intelligence

Question A1: **Who is known as the Father of Artificial Intelligence? (1 mark)**

Answer: (b) John McCarthy

Question A2: **What is 'Broad AI'? (1 mark)**

Answer: (d) Both (a) and (c)

Explanation: Broad AI refers to Strong AI or General AI, which can perform any intellectual task that a human can.

Question A3: **Which of these are true about AI: (1 mark)**

(i) AI can lead to job displacement of human workers.

(ii) AI skills can be useful to get better jobs.

Answer: (c) (i) and (ii) true

Question A4: **Write five key milestones of AI. (2 mark)**

Answer:

(a) 1956 – Coining of the term "Artificial Intelligence" by John McCarthy.

(b) 1997 – IBM's Deep Blue defeats world chess champion Garry Kasparov.

(c) 2011 – IBM Watson wins the quiz show Jeopardy.

(d) 2016 – AlphaGo defeats world champion in Go.

(e) 2022 – ChatGPT released demonstrating advanced conversational capabilities.

Question A5: **Compare Human Intelligence and Artificial Intelligence in at least five key areas. (3 mark)**

Answer:

(a) **Learning:** Human learns from experience; AI learns from data.

(b) **Creativity:** Humans are highly creative; AI lacks original creativity.

(c) **Decision Making:** Humans use emotions and logic; AI uses algorithms.

(d) **Adaptability:** Humans easily adapt to new environments; AI is domain-specific.

(e) **Speed:** AI can process data faster; humans take more time.

Question A6: **Discuss the applications of AI in any three industries and explain how it transforms operations. (2 marks)**

Answer:

- **Healthcare:** AI aids in diagnosis, treatment planning, and robotic surgeries.
- **Finance:** AI is used in fraud detection, risk analysis, and algorithmic trading.
- **Education:** AI enables personalized learning and intelligent tutoring systems.

SECTION - Assignment 2

Role of Data and Information, Evolution Computing

Question B1: **We identify qualitative data by identifying: (1 mark)**

Answer: (d) All of these

Question B2: **Which among these is the example of structured data? (1 mark)**

Answer: (a) Tables

Question B3: **The full form of EDA is . (1 mark)**

Answer: (a) Exploratory Data Analysis

Question B4: **How do you identify if a dataset is relevant and complete for your AI project? (2 mark)**

Answer:

- The data should match the problem domain and objectives.
- It should have all necessary attributes with minimal missing or corrupted values.
- It must represent all required classes or outcomes adequately.

Question B5: **Describe three major types of data: structured, unstructured, and semi-structured with examples. (2 mark)**

Answer:

- **Structured Data:** Organized into rows and columns. Example: SQL tables.
- **Unstructured Data:** No predefined format. Example: images, videos.
- **Semi-structured Data:** Partially organized. Example: JSON, XML.

Question B6: **Explain the process of data acquisition. Mention different methods and tools used. (3 mark)**

Answer:

- **Definition:** Data acquisition is the process of collecting raw data from various sources.
- **Methods:** Manual entry, web scraping, sensor input, APIs, surveys.
- **Tools:** Python (pandas, requests), Excel, Power BI, Google Forms, etc.

SECTION - Assignment 3

Data Representation and Programming in Python

Question C1: **Python Programming:** Create a list of 10 students in your class and sort them in alphabetical order. (3 marks)

Answer (Sample Code):

```
students = ["Raj", "Anita", "Kiran", "Bhavna", "Zara",  
            "Manav", "Deepak", "Reema", "Ajay", "Nina"]  
students.sort()  
print("Sorted list:", students)
```

Question C2: **Write a program that takes a string as input and returns the count of vowels (a, e, i, o, u) in the string. (3 marks)**

Answer:

```
text = input("Enter a string: ")  
count = 0  
for char in text.lower():  
    if char in "aeiou":  
        count += 1  
print("Number of vowels:", count)
```

Question C3: **Write four common types of errors in Python. (4 marks)**

Answer:

- **Syntax Error:** Mistakes in the structure of code.
- **Name Error:** Using variables that are not defined.
- **Type Error:** Performing operations on incompatible data types.
- **Index Error:** Trying to access an index that does not exist in a list.