

1. AI Domains and Applications



- A. 1. a) 2. a) 3. b) 4. a) 5. d)
- B. 1. Classification 2. Similarities 3. Predictions 4. Web
5. Amazon Alexa
- C. 1. T 2. F 3. T 4. T 5. T
- D. 1. Optical Character Recognition (OCR)
2. Classification
3. Sentiment analysis
4. Object tracking
5. Spatial dataset
- E. 1. Clustering is a method in AI where data is grouped together based on similarities. Unlike classification, clustering doesn't need labels to start with.
2. The domains of AI refer to the main areas or branches where AI is used to mimic or enhance human intelligence. Each domain focuses on a particular type of task that the human brain performs, such as language recognition, reasoning, learning, pattern recognition or understanding images. Mainly, there are three domains of AI:
- Computer vision
 - Natural Language Processing (NLP)
 - Data science
3. The process of computer vision typically involves the following steps:
- Step 1 Image acquisition: The computer captures an image using a camera, sensor or scanner, similar to how we take photos or scan documents.
- Step 2 Pre-processing: The captured image is pre-processed by cleaning and enhancing it, which includes removing noise, adjusting brightness and improving image quality for better analysis.

- Step 3 Feature extraction: The system extracts important features from the image, such as edges, shapes, colours and textures, to help in understanding the visual content.
- Step 4 Object categorisation: The system categorises the detected features into general classes, such as identifying whether the object belongs to categories like a car, person or animal.
- Step 5 Object identification: The system identifies the exact object by matching it with stored data or patterns to determine what the object specifically is.
- Step 6 Object tracking: The system tracks the movement of the identified object across multiple frames or images, such as following a moving car or a walking person in a video.
4. Data science involves collecting, analysing and interpreting large amounts of data to help machines recognise patterns and make decisions or predictions. It uses fields like mathematics, statistics and computer science to solve real-world problems.
5. NLP is applied in various ways to enable computers to understand and process human language. Some common types of NLP technologies are:
- Sentiment analysis: Sentiment analysis is used to identify whether a given text expresses a positive, negative or neutral opinion.
 - Semantic search: Semantic search focuses on understanding the intent behind a query and improves search results by offering relevant predictions.
 - Optical Character Recognition (OCR): OCR converts handwritten or printed text into machine-readable format.

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2. AI in Industries



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|----------------------------------|------------|------------|-----------------|---------------|
| A. 1. c) | 2. d) | 3. a) | 4. a) | 5. b) |
| B. 1. Virtual assistants | 2. systems | 3. fastest | 4. Khan academy | 5. Industries |
| C. 1. T | 2. F | 3. T | 4. F | 5. T |
| D. 1. Virtual tutors | | | | |
| 2. Virtual assistant or Chatbots | | | | |
| 3. Sensors | | | | |



4. Secondary industry
 5. X-rays and scans
- E.
1. AI optimises public transport schedules by predicting passenger demand and adjusting timings, reducing delays and overcrowding.
 2. The tertiary industry provides services rather than goods. This includes sectors such as healthcare, education, banking, transportation and retail.
 3. AI improves sound and video quality, reduces background noise and provides live captions and real-time translation. These features make communication clearer and more effective.
 4. AI-powered learning apps help students who find subjects like mathematics difficult by providing simpler explanations and additional practice problems. These apps cater to students of all learning levels, allowing those who learn quickly to progress at a faster pace while also offering support for those who need more time to understand the concepts.
 5. These devices alert users if any abnormal readings are detected, prompting them to visit a doctor and ensuring that immediate attention is given when needed.

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3. Data Visualisation and Analysis



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|--|--------------|--------|-------------|-------|
| A. 1. b) | 2. b) | 3. b) | 4. c) | 5. a) |
| B. 1. Sorting | 2. real-time | 3. CSV | 4. analysed | |
| 5. Disorganised | | | | |
| C. 1. T | 2. F | 3. F | 4. T | 5. T |
| D. 1. Structured Data | | | | |
| 2. Digital data | | | | |
| 3. Notepad | | | | |
| 4. Data visualisation | | | | |
| 5. Touch signals | | | | |
| E. 1. Data collection refers to the process of gathering information. You can collect data in many simple ways that help you understand patterns or make informed decisions. Two methods of data collection are: | | | | |

- Observation: One of the easiest ways to collect data is by observing things around you. You can gather information simply by watching and counting certain events or activities.
 - Surveys and Questionnaires: Another simple method is to ask questions and record the answers. This is called a survey or questionnaire. You can ask a group of people about something and collect their responses.
2. A database consists of three key components:
 - Table: A collection of similar data, such as a list of all students.
 - Row (Record): One entry in the table, like details about one student.
 - Column (Field): Specific information about each record, such as a student's name or marks.
 3. Two features of spreadsheets that help in analysing data are:
 - Spreadsheets allow you to perform calculations, such as finding averages or totals.
 - They enable you to create charts and graphs to visually track and analyse data, such as progress over time.
 4. Two advantages of using tables to organise data are:
 - Tables make it easy to compare values, such as identifying the highest or lowest marks in each subject.
 - Tables help in identifying patterns, like spotting trends in students' performance across subjects.
 5. Four steps to clean and organise data are:
 - Step 1 Remove errors or duplicates: This involves checking for mistakes or repeated information.
 - Step 2 Fill missing values: Missing data should be added or corrected to ensure accuracy.
 - Step 3 Arrange data in order: Sorting data to identify trends and makes comparison easier.
 - Step 4 Group related items: Organising similar data together.

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4. Ethics and AI Bias Awareness



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|-------------------|------------|------------|-----------|-----------------|
| A. 1. a) | 2. b) | 3. b) | 4. a) | 5. a) |
| B. 1. Responsible | 2. digital | 3. trained | 4. online | 5. digital user |



