INDIAN SCHOOL AL WADI AL KABIR

Class: VII	Department: Computer Science	Year: 2026-2027
Worksheet with solutions	Subject: **CT & AI** Chapter1: AI Domains & Applications	

SECTION A: MULTIPLE CHOICE QUESTIONS

1. **Which AI domain is considered "The Brain" of AI because it looks for patterns and predicts outcomes using organized data?**

   A) Natural Language Processing
   B) Computer Vision
   C) Data Science
   D) Object Identification

2. **What is the fundamental principle behind predictions in Artificial Intelligence?**

   A) Magic and intuition
   B) Logic and mathematics using past data
   C) Random guessing
   D) Real-time human intervention

3. **During the training of an AI model, what is the specific purpose of the validation dataset?**

   A) To perform the final performance check of the model
   B) To teach the model raw patterns and trends from scratch
   C) To evaluate and improve learning while the model is still training
   D) To gather and clean raw data from external sources

4. **In Computer Vision, which step typically involves noise reduction, distortion correction, and brightness/contrast adjustments to improve quality?**

   A) Image Acquisition
   B) Pre-processing
   C) Feature Extraction
   D) Object Identification

5. **How is unstructured data characterized according to the chapter's data structures?**

   A) Arranged in tables or spreadsheets with a defined schema
   B) Disorganized and in raw form with no clear model
   C) Consisting solely of numeric values and coordinates
   D) Automatically labeled and filtered during acquisition

6. **What is the role of tokenization in Natural Language Processing?**

   A) Breaking sentences down into individual words and removing punctuation
   B) Analyzing grammatical structure to see how words are arranged
   C) Resolving the meaning of words with multiple definitions
   D) Correcting distortions and noise in speech audio

Fill in the blanks

1. Artificial Intelligence (AI) is the field of computer science that makes machines intelligent, enabling them to perform tasks that usually require _____ intelligence.

2. _____ is a predictive technique that groups similar data together without pre-existing labels by comparing patterns, behaviors, and characteristics.

3. Datasets are groups of data used to teach and evaluate models; each piece of information is a data point containing several _____ or features.

4. Repetitive model tweaking and analysis using fresh data to improve model accuracy represents a process known as _____ loops.

5. Syntax or syntactic analysis is simply how NLP systems study the _____ structure of sentences to understand how words are arranged.

6. In Computer Vision, _____ tracks objects in each frame to preserve their identity across the entire sequence under challenging conditions such as varying lights and motion.

TRUE OR FALSE

1. Regression is a predictive technique in AI used to sort data into particular categories.

2. The final check to see if AI models have learned correctly is performed using the validation dataset.

3. Natural Language Processing (NLP) teaches machines to comprehend not just literal word meanings, but also the sentiment behind those words.

4. Structured datasets are organized, easy to search, and typically arranged in rows and columns with a defined schema.

Answers

Multiple Choice Questions

1. C) Data Science
2. B) Logic and mathematics using past data
3. C) To evaluate and improve learning while the model is still training
4. B) Pre-processing
5. B) Disorganized and in raw form with no clear model
6. A) Breaking sentences down into individual words and removing punctuation

FILL IN THE BLANKS

1. Human
2. Clustering
3. Attributes
4. Feedback
5. Grammatical

6. Object Tracking

SHORT ANSWER QUESTIONS

Question: 1. Define the term "AI domains" as described in the chapter.

AI domains represent the study and use of various fields within artificial intelligence designed to replicate human thinking capabilities, such as learning, seeing, language comprehension, and problem-solving.

Question: 2. What are the three main AI domains classification,

1) Data Science — "The Brain" (analyzes organized data, recognizes patterns, and predicts outcomes).
2) Computer Vision — "The Eyes" (interprets visual data like images and videos to identify objects or faces).
3) Natural Language Processing (NLP) — "The Mouth/Ears" (comprehends, interprets, and creates human language).

Question: 3. Differentiate between Classification and Regression as predictive techniques, providing an example of each.

• Classification: Sorts data into predefined categories based on labeled examples. Example: Filtering an email as spam or not spam.
• Regression: Predicts continuous numerical values by identifying how changes in attributes impact the output. Example: Predicting house prices based on size, location, and city variables.

Question: 4. What is Clustering? Provide one real-world business example of how it is used.

Clustering groups similar data together without pre-existing labels by discovering patterns and characteristics independently. Example: Retailers grouping customers into distinct segments based on their shopping habits for tailored marketing.

Question: 5. Explain the specific role and purpose of dividing a dataset into three parts: Training, Validation, and Test.

• Training Dataset: The portion used to teach the model patterns and trends from scratch.
• Validation Dataset: Used to evaluate and tweak/improve learning while the model is actively training.
• Test Dataset: Used to perform the final independent check to verify if the model has learned correctly.

Question: 6. Define "Computer Vision" and explain its primary goal.

Computer Vision is the branch of AI study and technology that enables machines to see, understand, and interpret visual information (images and videos) in the same manner as human eyes and minds do.

Question: 7. List the six steps of Computer Vision in the correct order.

1) Image Acquisition (gathering visual info)
2) Pre-processing (noise/contrast adjustment)
3) Feature Extraction (detecting patterns)
4) Object Categorization (classifying classes)

5) Object Identification (detecting exact location/bounding boxes)
6) Object Tracking (maintaining identity across frames).

Question: 8. Explain the role of Syntax/Syntactic Analysis in NLP.
Syntax analysis is the method by which NLP systems study the grammatical structure of sentences to determine how words are arranged and check the specific roles of each word (such as Subject → Verb → Object).

Question: 9. How do NLP systems analyze words with multiple meanings, such as "bat" (homonyms), using context?
NLP systems use semantics (meaning analysis) and deep learning to look at the other surrounding words in a sentence to determine context, sentiment, and intent. For example, 'ball' indicates bat means sports equipment, while 'flying' and 'night' indicates it means an animal.

Question: 10. Provide four real-world applications or examples of Natural Language Processing (NLP) listed in the chapter.
The four main real-world examples listed in the chapter are:
1) Virtual assistants (e.g., Siri, Alexa)
2) Chatbots and customer service platforms
3) Email spam detection algorithms
4) Automated text summarization tools.