



Class: VIII	Department: Computer Science	Year: 2026-2027
Worksheet with solutions	Subject: CT & AI Chapter1: AI Project Life Cycle	

SECTION A: MULTIPLE CHOICE QUESTIONS

- What is the primary source from which Artificial Intelligence (AI) and Machine Learning systems learn?**
a) Fixed programmed logic b) Luck and intuition c) Datasets and past experiences d) Manual hardware settings
- Which stage of the AI Project Lifecycle is considered the first and most crucial phase?**
a) Model Development b) Defining the Problem c) Data Collection d) Model Deployment
- An AI model correctly predicts 7 out of 10 spam emails during testing. What is its accuracy?**
a) 50% b) 70% c) 20% d) 100%
- What does the computing term 'Garbage In, Garbage Out' (GIGO) signify in AI?**
a) Smart bins automatically separate recyclable waste b) Low-quality or incorrect training data results in poor predictions c) Unused AI files are deleted automatically d) AI models require physical cleaning of servers
- What is the key element that distinguishes Artificial Intelligence from simple automation?**
a) Speed of computation b) Learning, adaptation, and decision-making from data c) The cost of hardware d) The program runs on mobile applications
- Which of the following is a classic example of AI-based system adaptation?**
a) A water sprinkler on a daily 10-minute automated timer b) An smart irrigation system watering plants based on soil moisture and predictive weather data c) A physical traffic light changing color every 45 seconds d) An electronic car wash repeating identical steps for all vehicle sizes
- What is the purpose of a 'test dataset' in model evaluation?**
a) To train the model initially b) To delete raw data from databases c) To measure how the model performs on new, unseen data d) To format columns in spreadsheets
- Which physical device measures changes in the environment and converts them into measurable electrical signals?**
a) Sensor b) Actuator c) Transducer d) Monitor
- Which task is NOT part of the Data Preparation stage?**
a) Removing duplicate entries b) Formatting data in spreadsheets c) Continuous monitoring of real-world server traffic d) Labelling dataset categories
- Why might an AI model's prediction accuracy decrease over time after deployment?**
a) The computer physical drive gets dusty b) Real-world user patterns, environments, or exam

structures change c) The model stops running and sleeps d) The system requires manual battery charging.

SECTION B: FILL IN THE BLANKS

1. AI systems are designed to mimic human _____ processes like learning and decision-making.
2. The step-by-step framework of building, testing, deploying, and improving AI tools is called the _____.
3. If an AI model displays low accuracy during testing, model _____ is required.
4. Empty, unrecorded, or unavailable data points in a dataset are referred to as _____ values.
5. The step where text is converted to numbers or data is organized neatly in spreadsheets is called Data _____.
6. An AI model acts as the _____ of the system, learning patterns to make predictions.
7. Asking target questions and collecting responses from groups of people is called a _____.
8. Integrating a trained AI spam filter into an email software system is an example of model _____.
9. Continuous checking of a deployed AI model's performance in real-world environments is called _____.
10. Modifying an active model over time by adding new data, retraining, and fixing errors is known as _____.

SECTION C: TRUE OR FALSE

1. An automatic car wash system that repeats identical cycles for every vehicle is an example of AI. (True / False)
2. To measure the true performance of an AI model, it must be evaluated on the same data used to train it. (True / False)
3. Adaptive traffic lights adjusting green timings based on live camera feeds represent an AI system. (True / False)
4. Raw data collected directly from websites or surveys is always completely clean and ready for training. (True / False)
5. The reliability and accuracy of an AI model are fundamentally determined by the quality of its input data. (True / False)
6. Once an AI model is deployed in a real-world system, it will maintain its initial accuracy forever without changes. (True / False).

SECTION D: SHORT ANSWER QUESTIONS

1. List and define the six stages of the AI Project Lifecycle in correct order.
2. Define 'Artificial Intelligence' based on what cognitive functions it tries to perform.
3. Contrast 'Automation' and 'Artificial Intelligence' using a comparative parameter.
4. Explain the 'Garbage In, Garbage Out' (GIGO) principle with a suitable example.
5. State three common issues or errors found in raw, unorganized datasets before processing.
6. Detail the three core tasks involved in 'Data Preparation' (Cleaning, Formatting, Labelling).
7. Explain why an AI model is compared to a student and the training dataset to a textbook.
8. Why must we evaluate an AI model on a separate 'test dataset' rather than the 'training dataset'?

9. What is 'model refinement' and what three actions can developers perform to refine a model?
10. Explain two reasons why an AI model's accuracy might decrease after deployment, and how to fix it.

SECTION E: THINK AND APPLY

Scenario 1: Study Group Success (Pattern Recognition)

An educational AI model is trained to predict whether student study groups will be 'Successful' or 'Unsuccessful' based on historical data. The model analyzes historical data as shown in the table below:

Group No.	Group Size	Study Material	Meeting Frequency	Success Status
Group 01	4 members	Lecture Slides	Weekly	Successful
Group 02	12 members	Textbook Only	Monthly	Unsuccessful
Group 03	3 members	Practice Exams	Weekly	Successful
Group 04	15 members	Textbook Only	Monthly	Unsuccessful

The AI model extracted a learned logical pattern: A study group is predicted to be 'Successful' if the group size is small (under 6 members), they use study materials like slides or practice exams, and they meet weekly. Otherwise, they are predicted to be 'Unsuccessful'.

Apply this learned pattern to predict and write the 'Final Status' for the two new study groups below:

Group No.	Group Size	Study Material	Meeting Frequency	Predicted Final Status
Group 05	5 members	Practice Exams	Weekly	_____
Group 06	14 members	Textbook Only	Monthly	_____

SECTION A Answers

1. c) Datasets and past experiences
2. b) Defining the Problem.
3. b) 70%
4. b) Low-quality or incorrect training data results in poor predictions
5. b) Learning, adaptation, and decision-making from data
6. b) An smart irrigation system watering plants based on soil moisture and predictive weather data
7. c) To measure how the model performs on new, unseen
8. a) Sensor
9. c) Continuous monitoring of real-world server traffic

10. b) Real-world user patterns, environments, or exam structures change

SECTION B Answers

1. Cognitive
2. AI Project Lifecycle
3. Refinement
4. Missing
5. Formatting.
6. Brain.
7. Survey
8. Deployment.
9. Monitoring
10. Maintenance

SECTION C Answers

1. **False** — An automatic car wash follows rigid, pre-programmed rules. It does not think, learn, or adapt, making it automation, not AI.
2. **False** — To test the model accurately, it must be evaluated on a separate, unseen 'test dataset' to confirm it can generalize to new inputs.
3. **True** — Adaptive traffic lights analyze traffic density and dynamically decide green timings, which constitutes AI behavior.
4. **False** — Collected raw data is often noisy, containing missing values, duplicates, errors, or irrelevant entries, requiring preparation.
5. **True** — An AI model's performance relies entirely on high-quality and reliable data, demonstrating the GIGO principle.
6. **False** — Real-world environments change, which causes accuracy to decline over time, meaning continuous monitoring and maintenance are essential.

SECTION D Answers

1. **Six Stages:** The correct order is: (1) Define the Problem, (2) Data Collection and Preparation, (3) Model Development and Training, (4) Model Evaluation and Refinement, (5) Model Deployment, and (6) Monitoring and Maintenance.
2. **Artificial Intelligence:** AI is technology that gives computers the ability to perform tasks requiring human intelligence, such as recognizing patterns, learning from experience, and making independent decisions.

3. Automation vs. AI: Automation runs on rigid, static rules set up ahead of time (e.g., a timer sprinkler). AI operates by learning and adapting dynamically from data (e.g., a weather-responsive sprinkler).

4. GIGO Principle: If an AI model is trained on poor, incomplete, or corrupted data, its output predictions will be incorrect. For example, training a grade predictor with wrong test scores leads to incorrect grade predictions.

5. Raw Data Issues: Common raw data issues include: (a) missing or empty values, (b) duplicate entries, and (c) incorrect or inaccurate records.

6. Data Prep Tasks: Data Cleaning removes errors and duplicates. Data Formatting structures data into clean columns/numbers. Data Labelling tags categories for prediction (like Spam/Not Spam).

7. Teacher/Textbook Analogy: The model behaves like a student learning patterns from examples, while the dataset acts as the textbook containing those examples. The learning process is model training.

8. Test Dataset: Using unseen test data ensures the model actually learned general patterns instead of just memorizing the training dataset.

9. Model Refinement: Model refinement is the improvement phase. Developers can: (a) add more training data, (b) remove incorrect training data, or (c) modify the model settings and retrain it.

10. Monitoring and Maintenance: Real-world patterns change over time (e.g., changes in student habits or exam patterns), dropping accuracy. Regular monitoring detects these drops, and maintenance retrains the model with new data.

SECTION E Answers

Scenario 1 (Group 05): Predicted Status: Successful. Justification: Group 05 is small (5 members), uses practice exams (slides/exams), and meets weekly, perfectly matching the learned success pattern.

Scenario 1 (Group 06): Predicted Status: Unsuccessful. Justification: Group 06 has a large size (14 members), uses textbooks only, and meets monthly, failing the success criteria.