



GRADE:IX	SUBJECT: ARTIFICIAL INTELLIGENCE	DATE: 14.02.2025	TIME:2HRS	MARKS:50
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**ANSWER KEY**

**SECTION A: OBJECTIVE TYPE QUESTIONS**

**Q1. Answer any 4 out of the given 6 questions. (4Q X 1M = 4M)**

- i. An innate drive to aim high and achieve success is known as \_\_\_\_\_.  
a. Risk tolerance      **b. Need for achievement**      c. Integrity      d. Creativity
- ii. Data is stored temporarily in \_\_\_\_\_.  
a. ROM      b. Hard Disk      c. Scanner      **d. RAM**
- iii. SWOT stands for Strength, Weakness, Opportunity and \_\_\_\_\_.  
**a. Threat**      b. Time Bound      c. Terror      d. Trial
- iv. \_\_\_\_\_ adversely affects self-confidence of a child.  
a. Overprotective parenting      b. Love and care      c. Physical punishment      **d. Both a and c**
- v. Which one of the following is not a method of communication?  
a. Verbal      b. Non-verbal      c. Visual      **d. Non-visual**
- vi. An ecosystem is a community of living and non-living components which are \_\_\_\_\_.  
**a. interdependent on each other**      b. independent of each other  
b. irrelevant of each other      d. incompatible of each other

**Q2. Answer any 5 out of the given 6 questions. (5Q X 1M = 5M)**

- i. Every information that you observe in your daily routine forms a pattern .
- ii. Which of the following enables computers to identify and process images like humans do?  
a. Natural Language Processing      **b. Computer Vision**  
c. Eye-in-hand System      d. Recommendation Systems
- iii. \_\_\_\_\_ allows us to understand why things are happening in a particular way.  
a. Data      b. Information      c. **Knowledge**      d. Wisdom
- iv. Which of the following is one of the most reliable and authentic sources of data?  
a. Social media posts      b. Open-sourced government portals  
c. Private company's data      **d. None of these**
- v. Qualitative data is collected through observations. (True/False)
- vi. Which data visualization tool is a popular Python library that allows for creating static, animated, and interactive visualizations?  
a. Tableau      b. Highcharts      c. Excel      **d. Matplotlib**

**Q3. Answer any 5 out of the given 6 questions. (5Q X 1M = 5M)**

- i. Probability helps in predicting a future event based on historical data.
- ii. Testing data is used to evaluate the performance of the AI model.
- iii. In which approach does the machine follow the rules defined by the developer and produce the required output?  
a. Learning-based approach      **b. Rule-based approach**  
c. Both a and b      d. None of these
- iv. A bag contains 3 red balls and 7 blue balls. If one ball is drawn at random, what is the probability that it is red?  
a. 1/10      **b. 3/10**      c. 1/3      d. 3/7
- v. Unsupervised learning is also called \_\_\_\_\_.  
**a. Independent learning**      b. Pattern learning  
c. Self-supervised learning      d. Individual learning
- vi. Which of the following is an ethical concern related to AI?  
a. Error-free work and increased productivity      **b. Accountability**  
c. Efficiency of AI      d. Innovations in AI technology

**Q4. Answer any 5 out of the given 6 questions. (5Q X 1M = 5M)**

- i. Discriminative models are also called \_\_\_\_\_ .  
a. **Predictive models**    b. Superactive models    c. Regression models    d. Proactive models
- ii. What does AI bias refer to?  
a. AI systems providing error-free results  
b. AI algorithms giving efficient results  
c. The impartiality in AI decision-making  
**d. The production of biased results due to training on biased data**
- iii. What is the primary focus of the information stage in data pyramid?  
a. Collecting raw data from various sources    **b. Processing data to collect meaningful information**  
c. Encrypting data for security purposes    d. Visualising data using graphs and charts
- iv. **Virtual Assistants** like Siri, Alexa, and Google Assistant, use generative AI to understand user commands and generate responses.
- v. Secondary data is refined data because it is extracted from **primary** data.
- vi. What is data?  
a. Ability to collect information    b. A skill to interpret information  
**c. Raw facts or numbers**    d. Visual representation of information

**Q5. Answer any 5 out of the given 6 questions. (5Q X 1M = 5M)**

- i. **Training** data is the initial dataset used to train an AI model.
- ii. What does VAE stand for?  
a. Variety Autoencoder    b. Variational AI Encoder  
**c. Variational Autoencoder**    d. Variational Autoencoding
- iii. Which of the following is a measure of central tendency?  
a. Mean    b. Mode    c. Median    **d. All of these**
- iv. \_\_\_\_\_ is the practice of protecting digital information from unauthorised access, corruption, or theft throughout its entire lifecycle.  
**a. Data security**    b. Data literacy    c. Data privacy    d. Data acquisition
- v. \_\_\_\_\_ is a visual diagram that shows how all the elements are connected or related to each other.  
a. 4Ws canvas    **b. System map**    c. Bar Chart    d. Pie Chart
- vi. Which characteristic describes quantitative data?  
a. It is uncountable and expressed in words.  
**b. It is countable and expressed using finite numbers.**  
c. It is descriptive and non-numeric.  
d. It is obtained through observations and descriptions.

### SECTION B: SUBJECTIVE TYPE QUESTIONS

**Answer any 3 out of the given 5 questions. (3Q X 2M = 6 M)**

- Q6. What do you understand by self-management? Explain its importance.  
Ans. **Self-management is managing yourself to achieve the pre-determined goals or task that you have set for yourself. This is done by regulating your actions, organising your time, and being accountable for your decisions. Appropriate self-management can help students perform better in school, reduce delinquent behaviour, and help individuals perform better on the job.**
- Q7. Enlist the 7C's of communication.  
Ans. **Clear, correct, complete, concrete, concise, consideration, courteous**
- Q8. What are the components of CPU? Explain them briefly.  
Ans. **There are three main components in a CPU. Arithmetic and Logical Unit (ALU): ALU is the component of CPU, which performs the arithmetic and logical operations on the operands. Control Unit (CU): This unit controls the operation of every other component of a computer system. It also controls the transfer of data and instructions among the various units of a computer. Memory Unit (MU): The memory unit is the principal storage of the computer. It stores both data and instructions.**

Q9. What is entrepreneurship?

Ans. **Entrepreneurship is the act of setting a pub business and taking on financial risks in the hope of making a profit.**

Q10. Define the term green job.

Ans. **Green job is defined as a work in agriculture, manufacturing, research and development, administrative and service activities that contributes towards preserving and restoring the quality of environment.**

**Answer any 4 out of the given 6 questions in 20 – 30 words each.**

**(4Q X 2M = 8M)**

Q11. List the parameters of the 4Ws canvas that we need to know while solving a problem.

Ans. **The parameters of the 4Ws canvas are: Who? What? Where? Why?**

Q12. What is data literacy?

Ans. **Data literacy is the ability to collect, read, analyse, and interpret data effectively.**

Q13. Write four mathematical skills that are important for AI.

Ans. **1. Calculus 2. Linear algebra 3. Statistics 4. Probability**

Q14. What is generative AI?

Ans. **Generative AI is an advanced form of AI that creates new content in the form of images, text, and audio, based on the data it has learnt from.**

Q15. Define deep learning.

Ans. **Deep learning enables machines to learn from and perform tasks on a large amount of data. It is based on neural networks with multiple layers that mimic the working of the human brain.**

Q16. What is data processing?

Ans. **Data processing is the series of operations performed on raw data to convert it into meaningful information. This process involves several steps, each of which is crucial for ensuring that the data is accurate, complete, and usable.**

**Answer any 3 out of the given 5 questions in 50– 80 words each.**

**(3Q X 4M = 12M)**

Q17. List the five stages in the AI project cycle. Write brief description of each.

- Ans.
- **Problem scoping: The first step is to understand and define the problem that we want AI to solve. Problem scoping is the stage where we set clear goals and outline the objectives of the AI project.**
  - **Data Acquisition: This stage focuses on collecting the relevant data required for the AI system. Since this data forms the base of your project, care must be taken that the data is collected from reliable and authentic sources.**
  - **Data Exploration: This stage involves exploration and analyses of the collected data to interpret patterns, trends and relationships. The data is in large quantities, so in order to understand the patterns easily, you can use different visual representations such as graphs, databases, flow charts and maps.**
  - **Modelling: After exploring the patterns, you need to select the appropriate AI model to achieve the goal. This model should be able to learn from the data and make predictions.**
  - **Evaluation: The selected AI model now needs to be tested and the results need to be compared with the expected outcome. This helps in evaluating the accuracy and reliability of the model and improving it.**

Q18. Write any four applications of probability in Traffic Estimation.

- **Regular people often use probability when they decide to drive to someplace.**
- **Probability can be used to estimate traffic volume at a particular road segment.**
- **Probability can be used to determine the travel patterns and demand between different origins and destinations.**
- **Probability can be used to estimate the demand for public transportation based on population demographics, land use, and existing transport networks.**

Q19. What is Natural Language Processing (NLP)? How does NLP make it possible for computers to understand and interpret human language? Give some examples of NLP applications.

Ans. **Natural Language Processing (NLP) is the ability of computers to understand and interpret human language and text, i.e., natural language. The goal of NLP is to take a verbal or written input, process it, and understand it. Examples: Email filters or spam filters: They help separate unwanted or malicious messages, known as spam, from genuine emails. Virtual assistants and chatbots: We can use natural language to give instructions to virtual phone assistants, like Siri or Google Assistant. Chatbots use NLP to understand and respond to human language**

input in a natural way.

Q20. Write any four applications of generative AI.

- Ans.
- Video generation through a text prompt
  - Art generation through text or image
  - Music generation through description
  - Different patterns and sketches can be generated with the help of generative AI

Q21. List any four practices that help you maintain cyber security.

- Ans.
- Always use encryption techniques to protect sensitive data.
  - Never share the One-Time Password (OTP) that you receive on your mobile phone.
  - Activate Two-Factor Authentication (2FA) for added security.
  - Prioritise websites with "https://" for secure logins.