

PRACTICE PAPER 5
CLASS IX
ARTIFICIAL INTELLIGENCE (CODE 417)

Time: 2 Hours

Maximum Marks: 50

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **21 questions** in two sections: **Section A & Section B**.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A—OBJECTIVE TYPE QUESTIONS (24 MARKS):**
 - (a) This section has 5 questions.
 - (b) Marks allotted are mentioned against each question/part.
 - (c) There is no negative marking.
 - (d) Do as per the instructions given.
7. **SECTION B—SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
 - (a) This section has 16 questions.
 - (b) A candidate has to do 10 questions.
 - (c) Do as per the instructions given.
 - (d) Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

- 1. Answer any 4 out of the given 6 questions on Employability Skills. (1 × 4 = 4 marks)**

- (i) You are working on a group project and one of your teammates is not contributing much. Instead of getting frustrated, you take the initiative to have a calm conversation with them and find out how you can support them in completing their tasks.

Which self-management skill are you demonstrating in the given scenario?

- (ii) What is the first step in communication?

- (a) Encoding (b) Decoding (c) Feedback (d) Channel Selection

- (iii) **Assertion (A):** Entrepreneurs are essential for the growth of the economy, as they create businesses, generate employment and drive innovation.

Reasoning (R): Entrepreneurs focus primarily on making quick profits and are not concerned with the long-term growth or sustainability of their businesses.

- (a) Both A and R are true and R is the correct explanation for A.
(b) Both A and R are true but R is not the correct explanation for A.
(c) A is true but R is false.
(d) A is false but R is true.

- (iv) What does 'U' represent in 4Rs and 1U?

- (a) Utilize (b) Upgrade
(c) Upcycle (d) Use

- (v) A person who starts an enterprise is known as _____.

- (vi) Imagine you are using a computer to run multiple programs at the same time. You have a word processor open, a web browser running and music playing in the background. The operating system is managing these tasks efficiently without any interference.

Which of the following major functions of the operating system is being demonstrated in this scenario?

- (a) Memory Management (b) File Management
(c) Process Management (d) Security Management

2. Answer any 5 out of the given 6 questions.

(1 × 5 = 5 marks)

- (i) **Assertion (A):** The AI project cycle includes several stages such as problem definition, data collection, model training and deployment.

Reasoning (R): The AI project cycle always begins with data collection, as gathering data is the first and most important step in developing any AI model.

- (a) Both A and R are true and R is the correct explanation for A.
(b) Both A and R are true but R is not the correct explanation for A.
(c) A is true but R is false.
(d) A is false but R is true.

- (ii) Which of the following is not a reliable source of data?

- (a) Air quality monitors (b) Sensor data
(c) Application Programming Interfaces (APIs) (d) Human imagination

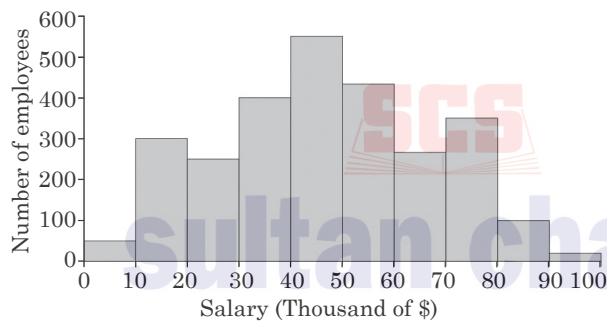
- (iii) **Statement 1:** The expression $(10\%5)**3$ evaluates to 0.

Statement 2: In the expression, $10\%5$ calculates the remainder when 10 is divided by 5.

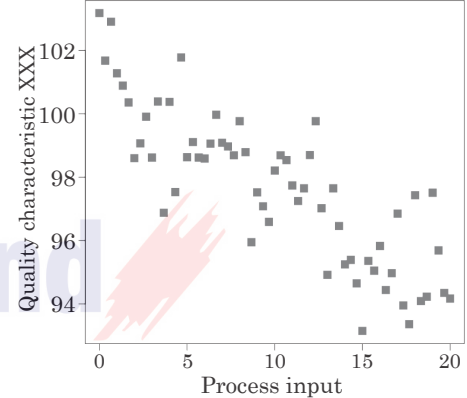
- (a) Both Statement 1 and Statement 2 are correct.
(b) Both Statement 1 and Statement 2 are incorrect.
(c) Statement 1 is correct but Statement 2 is incorrect.
(d) Statement 2 is correct but Statement 1 is incorrect.

- (iv) Which is the most suitable chart for comparison-based data stories?

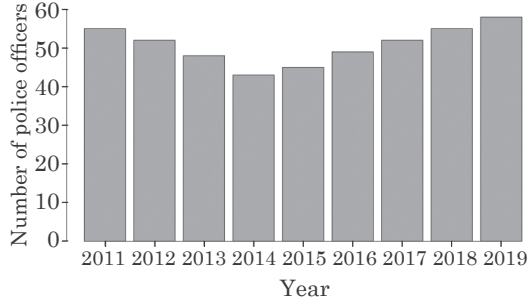
- (a) Distribution of salaries of the employees of ABC Corporation



- (b) Process for quality characteristic XXX



- (c) Number of police officers in Crimeville, 2011 to 2019



- (d) All of these

- (v) Which domain of Artificial Intelligence helps the computer understand human gestures?

- (a) Natural Language Processing (b) Computer Vision
(c) Data Science (d) Data Analytics

- (vi) Which of the following types of Generative AI models is primarily used for generating realistic images, such as creating art or simulating real-world photos?

- (a) Generative Adversarial Networks (GANs) (b) Decision Trees
(c) K-means Clustering (d) Linear Regression

3. Answer any 5 out of the given 6 questions.

(1 × 5 = 5 marks)

- (i) In the context of Artificial Intelligence, what does CV stand for?

- (a) Central Validation (b) Computer Vision
(c) Creative Visualization (d) Critical Validation

- (ii) Mode is the value that appears _____ in a dataset.
- (iii) Which of the following is an important cybersecurity practice?
- (a) Using strong passwords (b) Keeping software updated
(c) Using secure networks (d) All of these
- (iv) Which of the following is not a sequence data type?
- (a) String (b) Tuples (c) Dictionary (d) List
- (v) You are starting an AI project. Which of the following makes Python the preferred language for your project?
- (a) Complex syntax and structure (b) Specific use for certain AI domains
(c) Extensive libraries and simplicity (d) Low-level memory management
- (vi) Which of the following is an example of a Generative AI application?
- (a) Spam filtering (b) Facial recognition
(c) Composing music in a specific style (d) Playing chess

4. Answer any 5 out of the given 6 questions.

(1 × 5 = 5 marks)

- (i) If you want to show 5 using tally marks, which symbol will represent a count of five?
- (a) \ (b) \\ (c) \\\ (d) \\\\\
- (ii) **Statement 1:** Predicting the weather refers to weather forecasting while self-driving cars are categorized as autonomous vehicles.
- Statement 2:** Virtual assistants like Siri or Alexa use AI to understand voice commands and perform tasks while image recognition uses AI to identify objects or people in pictures.
- (a) Both Statement 1 and Statement 2 are correct.
(b) Both Statement 1 and Statement 2 are incorrect.
(c) Statement 1 is correct but Statement 2 is incorrect.
(d) Statement 2 is correct but Statement 1 is incorrect.
- (iii) Imagine you are presenting data to a non-expert audience. How would data visualization and communication help you convey the message clearly?
- (a) Storing data in physical formats
(b) Presenting data using charts, graphs and infographics
(c) Deleting unnecessary data
(d) Ignoring data analysis
- (iv) What is the purpose of using comments in Python?
- (a) To enhance code performance (b) To explain code logic
(c) To disable the code (d) To change the functionality of the code
- (v) Which AI model is not used to create background music in multimedia projects?
- (a) Generative Adversarial Networks (GANs) (b) Recurrent Neural Networks (RNNs)
(c) Variational Autoencoders (VAEs) (d) Decision Trees
- (vi) You want to write a statement to make a specific part of code understandable but don't want to execute it. How would you do this in Python?
- (a) <! --This is a comment --> (b) /* This is a comment */
(c) # This is a comment (d) "This is a comment"

5. Answer any 5 out of the given 6 questions.

(1 × 5 = 5 marks)

- (i) Imagine you are building a chatbot that can understand user queries and generate appropriate responses in human language. The system needs to both comprehend what the user says and respond with meaningful text. Which of the following components of Natural Language Processing (NLP) is being used in this scenario?
- (a) Natural Language Understanding (b) Natural Language Generation
(c) Both (a) and (b) (d) Neither (a) nor (b)
- (ii) Find the value of X in the given equation.
 $7X + 11 = 4$
- (a) 4 (b) -1 (c) 1 (d) -7
- (iii) How do you assign a value of 42 to a variable named 'num' in Python?
- (a) num = "42" (b) num = 42 (c) 42 = num (d) num : = 42
- (iv) Privacy concerns arise when _____ AI creates content mimicking real people.
- (v) What does 'data-enabled questioning' involve?
- (a) Learning to frame questions that can be answered using data
(b) Ignoring data during decision-making
(c) Collecting data without questions
(d) Analyzing data without any context
- (vi) _____ is not an example of Weak AI.
- (a) Self-driving car (b) Alexa
(c) Artificial General Intelligence (AGI) (d) Human-like robot

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills in 20–30 words each.

(2 × 3 = 6 marks)

6. Differentiate between Verbal and Non-Verbal Communication. Provide examples of each.
7. What are the different types of businesses?
8. Your friend wants to understand the concept of 'ecosystem'. How would you differentiate between living (biotic) and non-living (abiotic) components?
9. Enlist the 7Cs of effective communication.
10. How can you identify if you are under stress?

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

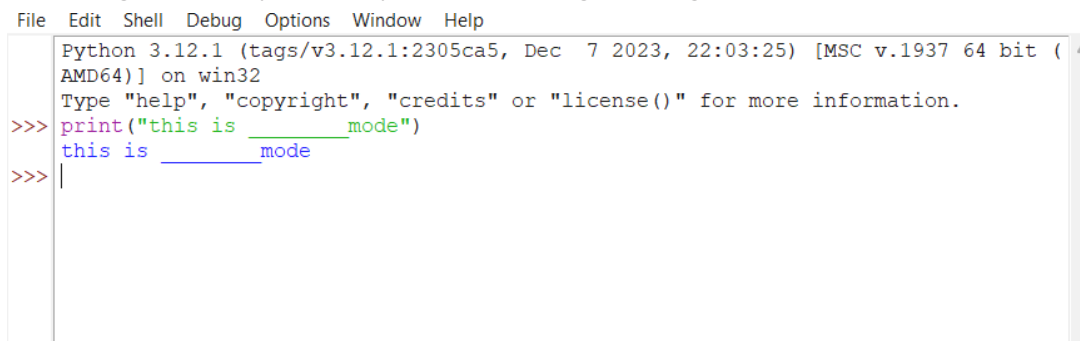
(2 × 4 = 8 marks)

11. Suppose you are working on a project with highly complex data that needs continuous prediction. Would decision trees be ideal for this situation? When should we not use decision trees?
12. Imagine you have collected numerical and categorical responses in a survey. How would you categorize these two types of data?
13. Suppose you are conducting a market research study. Which methods would you use to gather data directly from the participants?
14. Explain the importance of Data Interpretation.
15. How can we convert data type of a variable from one type to another?
16. Draw a confusion matrix for the following data:
☐ True Positives (TP): 350
☐ True Negatives (TN): 150
☐ False Positives (FP): 30
☐ False Negatives (FN): 50

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

(4 × 3 = 12 marks)

17. Your friend struggles to understand lots of data. Explain to them the role of data visualization in Artificial Intelligence.
18. Aditya wants to know how Recurrent Neural Networks (RNNs) get trained. Explain.
19. Which working mode of Python is represented in the given image? How it is different from the other mode?



```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec 7 2023, 22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> print("this is mode")
this is mode
>>> |
```

20. Suppose you are writing a Python code and come across words that are reserved and others that are not. What is the difference between the words that Python recognizes as special and the custom names that you create?
21. AI technologies have shown impressive capabilities in areas like healthcare, finance and customer service. However, there are several limitations that restrict their full potential.
 - (a) Explain three major limitations of AI, providing real-world examples for each.
 - (b) How can these limitations impact the reliability and effectiveness of AI in critical applications like autonomous vehicles or medical diagnostics?