MATH LOVE INSTITUTE

CBSE Class 9 Artificial Intelligence (Code: 417)

Home Exam 2025-26 - Sample Paper Set 6 with Solutions

Based on Latest CBSE Syllabus 2025-26

Maximum Marks	80 (Theory: 50 + Practical/Viva: 30)
Time Allowed	3 Hours
Class	IX (Nine)
Subject	Artificial Intelligence (417)

📋 GENERAL INSTRUCTIONS:

1. This question paper contains **35 questions** divided into **Five Sections A, B, C, D and E**.
2. **Section A** comprises of 15 MCQs of 1 mark each.
3. **Section B** comprises of 5 Very Short Answer questions of 2 marks each.
4. **Section C** comprises of 6 Short Answer questions of 3 marks each.
5. **Section D** comprises of 3 Long Answer questions of 5 marks each.
6. **Section E** comprises of 3 case study based questions of 4 marks each with internal choice.
7. All questions are **compulsory**. However, internal choices have been provided in some questions.
8. Write clean and well-structured answers.

SECTION A - MULTIPLE CHOICE QUESTIONS (1 × 15 = 15 Marks)

Q1. Spotify recommending songs based on listening history uses which AI domain? **[1]**

(a) Computer Vision

(b) Data Analytics

(c) Robotics

(d) Manual Processing

Q2. OCR (Optical Character Recognition) that converts images to text uses: **[1]**

(a) Data domain only

(b) Computer Vision

(c) NLP only

(d) None of these

Q3. "Student grade: A/B/C/D" is an example of: **[1]**

(a) Quantitative continuous data

(b) Quantitative discrete data

(c) Qualitative ordinal data

(d) None of these

Q4. The mean of 10, 20, 30, 40, 50 is: **[1]**

(a) 25

(b) 30

(c) 35

(d) 40

Q5. If you roll a standard die, the probability of getting a number less than 5 is: **[1]**

(a) 1/6

(b) 2/3

(c) 4/6

(d) 5/6

Q6. Which is NOT a characteristic of Generative AI? **[1]**

(a) Creates new content

(b) Learns from existing data

(c) Only retrieves stored data

(d) Can generate text, images, audio

Q7. What is the output of: print(7 + 3 * 2)? **[1]**

(a) 20

(b) 13

(c) 12

(d) 14

Q8. Which Python method removes an element at a specific index? **[1]**

(a) remove()

(b) pop()

(c) delete()

(d) discard()

Q9. What does the 'range(1, 6)' function generate? **[1]**

(a) 1, 2, 3, 4, 5

(b) 1, 2, 3, 4, 5, 6

(c) 0, 1, 2, 3, 4, 5

(d) 2, 3, 4, 5, 6

Q10. Modeling is the _____ stage of the AI Project Cycle: **[1]**

(a) Second

(b) Third

(c) Fourth

(d) Fifth

Q11. Which Python keyword is used to import modules? **[1]**

(a) include

(b) import

(c) require

(d) load

Q12. What will 'len([1, 2, 3, 4])' return? **[1]**

(a) 3

(b) 4

(c) 5

(d) Error

Q13. Variance and standard deviation are measures of: **[1]**

(a) Central tendency

(b) Dispersion

(c) Frequency

(d) Correlation

Q14. Pie charts are best for showing: **[1]**

(a) Trends over time

(b) Comparison of categories

(c) Parts of a whole

(d) Correlation

Q15. Autonomous Tesla cars use which AI domain for navigation? **[1]**

(a) NLP

(b) Computer Vision

(c) Data mining

(d) Text processing

SECTION B - VERY SHORT ANSWER QUESTIONS (2 × 5 = 10 Marks)

Q16. What is Problem Scoping in AI Project Cycle? Why is it the first and most important stage? **[2]**

Q17. Differentiate between qualitative and quantitative data with one example each. **[2]**

Q18. Calculate the median of: 14, 9, 22, 11, 18, 7, 25 **[2]**

Q19. Write a Python program to check if a number is divisible by both 3 and 5. **[2]**

Q20. What are the three main domains of AI? Name them. **[2]**

SECTION C - SHORT ANSWER QUESTIONS (3 × 6 = 18 Marks)

Q21. Explain how AI is revolutionizing manufacturing, sports, and customer service (one application each). **[3]**

Q22. What is data normalization in AI? Why is it important for machine learning models? **[3]**

Q23. A spinner has 8 equal sections numbered 1 to 8. Find the probability of getting: **[3]**
(i) An odd number
(ii) A number divisible by 4
OR
Calculate the mean and range of: 42, 38, 55, 47, 50, 44, 39

Q24. Write a Python program to print the multiplication table of any number entered by user (up to 10). **[3]**

Q25. What is fairness in AI? Explain with one example of how AI can be unfair. **[3]**

Q26. Explain the importance of data privacy in AI. What are two ways to protect user data? **[3]**

SECTION D - LONG ANSWER QUESTIONS (5 × 3 = 15 Marks)

Q27. Explain how a recommendation system (like Netflix) works using all five stages of AI Project Cycle. **[5]**
OR
What is overfitting and underfitting in machine learning? Explain with examples and how to prevent them.

Q28. Write a Python program that: **[5]**
(a) Creates a list of first 10 even numbers
(b) Displays the list
(c) Calculates and displays the sum of the first 5 elements
(d) Calculates and displays the sum of the last 5 elements
(e) Compares and displays which sum is greater

Q29. A fitness tracker recorded daily steps for a week: **[5]**

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Steps	8000	10000	7500	12000	9500	11000	8500

(a) Find the average daily steps for the week.

(b) Calculate the median.

(c) On how many days were steps above 10,000?

(d) What is the total distance walked if 1000 steps = 0.8 km?

SECTION E - CASE STUDY BASED QUESTIONS (4 × 3 = 12 Marks + 3 Internal Choice = 15 Marks)

Q30. **[4]**

CASE STUDY 1: AI in Healthcare - Disease Prediction

A hospital uses an AI system to predict heart disease risk. The system analyzes patient data:

- Age (years)
- Blood pressure (mmHg)
- Cholesterol level (mg/dL)
- Smoking status (Yes/No)
- Exercise habits (Sedentary/Active)

The AI was trained on 50,000 patient records and achieves 92% accuracy. It helps doctors identify high-risk patients early for preventive treatment.

Based on the above information, answer the following questions:

(i) Is "age" qualitative or quantitative data? **[1 mark]**

(ii) Is "smoking status" qualitative or quantitative data? **[1 mark]**
OR
Which AI domain is being used - Data, CV, or NLP?

(iii) What are two benefits of early disease prediction using AI? **[2 marks]**

Q31. **[4]**

CASE STUDY 2: AI-Powered Language Tutor

An app helps students learn foreign languages using AI. Features include:
• Speech recognition to check pronunciation (NLP)
• Personalized lessons based on progress (Data Analysis)
• Real-time translation of conversations (NLP)
• Image recognition to teach vocabulary (Computer Vision)

Example: Student takes photo of an apple → AI identifies it and teaches the word in target language

Based on the above information, answer the following questions:

(i) How many AI domains are used in this app? **[1 mark]**

(ii) Which domain helps identify objects from photos? **[1 mark]**
OR
Which domain processes speech for pronunciation checking?

(iii) Give two advantages of using AI for language learning over traditional methods. **[2 marks]**

Q32. **[4]**

CASE STUDY 3: Social Media Engagement Analysis

A company analyzed social media engagement for 5 posts:

Post	1	2	3	4	5
Likes (in 1000s)	15	22	18	25	20

Based on the above information, answer the following questions:

(i) Find the average engagement per post. **[1 mark]**

(ii) Which post performed best? **[1 mark]**
OR
What is the range of engagement?

(iii) Write Python code to store engagement data and find which posts exceeded 20k likes. **[2 marks]**

📚 END OF QUESTION PAPER 📚

Theory Total Marks: 50

Section A: 15 marks | Section B: 10 marks | Section C: 18 marks

Section D: 15 marks | Section E: 12 marks

Practical/Viva/Project: 30 marks

Grand Total: 80 marks

CBSE Class 9 AI Syllabus 2025-26
Complete coverage of all topics