



B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL



Term-I Examination (2026-2027) ARTIFICIAL INTELLIGENCE (417) Set-01

Class: X

Date: 11/09/26

Admission No.

Time : 3 hr

Max Marks: 50

Roll No. :

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper contain two sections: Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. All questions of a particular section must be attempted in the correct order.
5. **SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):**
 - i. This section has 05 question.
 - ii. Marks allotted are mentioned against question/part.
 - iii. There is no negative marking.
 - iv. Do as per the instructions given.
6. **SECTION B – SUBJECTIVE TYPE QUESTIONS (18 MARKS):**
 - i. This section has 16 questions.
 - ii. A candidate has to do 11 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

SECTION A: OBJECTIVE TYPE QUESTIONS

Q. 1 Answer any 4 out of the given 6 questions on Employability Skills

(1 x 4 = 4)

1. c. Both a) and b)
2. a. Latin Word
3. a. Stress
4. b. Strength
5. a. .txt
6. b. Graphical User Interface

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

(1 x 5 = 5)

1. (c) Data Science
2. (c) NLP
3. (b) (i), (iii) and (iv) only
4. (a) Both Statement 1 and Statement 2 are correct
5. (d) Natural Language Understanding
6. (b) Data Privacy

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

(1 x 5 = 5)

1. **(b) Learning from Data**
2. **(b) Marked or tagged data**
3. **(c) Grouping photos in a gallery into "vacation", "family", and "pets" categories.**
4. **(b) Receive data**
5. **(c) Reinforcement Learning**
6. **(b) The desired outcome is clear, but the path to achieve it is unknown.**

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

(1 x 5 = 5)

Here are the correct answers:

1. **(b) Precision**
2. **(c) False Negative**
3. **(a) When the model incorrectly predicts a positive value when the actual value is negative**
4. **(b) 0.67**
5. **(d) The percentage of correct predictions out of total predictions**
6. **(a) The difference between the model's prediction and the actual outcome**

For Q4:

- $TP = 120$
- $FN = 200 - 120 = 80$
- $FP = 40$
- $Precision = 120 / (120 + 40) = 0.75$
- $Recall = 120 / (120 + 80) = 0.60$
- $F1\ Score = 2 \times (0.75 \times 0.60) / (0.75 + 0.60) = 0.67$

So, Q4 should actually be **(b) 0.67**, not (c) 0.72.

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

(1 x 5 = 5)

1. **(b) The amount, quality and type of data it receives**
2. **(b) Through algorithms and data**
3. **(c) Click-Through Rate**
4. **(b) It allows people with limited technical skills to build AI models**
5. **(b) To extract meaningful insights from data**
6. **(a) To understand and interpret visual information from the world**

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 7 out of the given 10 questions:

(2 x 7 = 14)

Q. (2) What is Verbal Communication?

Verbal communication is the exchange of information using words, either through speaking or writing. Examples include conversations, speeches, phone calls, and written messages.

Q. (3) What are the advantages of working independently?

Working independently develops self-confidence, responsibility, and decision-making skills. It also helps a person manage time effectively and complete tasks without depending on others.

Q. (4) What is an Operating System?

An Operating System (OS) is system software that manages computer hardware and software resources. It also provides an interface between the user and the computer.

Q. (5) Why is data backup important?

Data backup protects important information from loss due to accidental deletion, hardware failure, viruses, or system crashes. It allows the lost data to be restored when required.

Q. (6) What is the AI Project Cycle?

The AI Project Cycle is a step-by-step process used to develop an AI-based solution. Its main stages are Problem Scoping, Data Acquisition, Exploration, Modelling, and Evaluation.

Q. (7) What do you understand by Statistical Data?

Statistical data is information collected in the form of numbers or observations for analysis. It helps in identifying patterns, trends, and relationships and in making decisions.

Q. (8) Why is it important to maintain a balance between bias and variance in a machine learning model?

A balance between bias and variance helps a model perform well on both training and unseen data. High bias causes **underfitting**, while high variance causes **overfitting**.

Q. (9) What is Teachable Machine?

Teachable Machine is a web-based tool developed by Google that allows users to train simple machine learning models without coding. It can recognise images, sounds, and poses.

Q. (10) How are face filters used in Computer Vision?

Face filters use Computer Vision to detect and track facial features such as the eyes, nose, and mouth. They then add virtual effects, masks, or objects to the face in real time.

Q. (11) What is classification in Computer Vision?

Classification is the process of identifying and assigning an image to a predefined category or class. For example, a model can classify an image as a **cat, dog, or bird**.

Answer any 4 out of the given 6 questions:

(3 x 4 = 12)

[2 Marks Questions – Answers](#)

Q. (12) Explain any three applications of Statistical Data.

1. **Business:** Helps businesses analyse sales, customer behaviour, and market trends.
2. **Healthcare:** Helps analyse patient data and identify health trends.
3. **Education:** Helps evaluate student performance and improve teaching methods.

Q. (13) What is Rule-based Approach? Write any one drawback of it.

A rule-based approach uses predefined **if-then rules** to make decisions or solve problems. One drawback is that it cannot easily handle new or unexpected situations that are not covered by the rules.

Q. (14) Explain the concept of a Confusion Matrix and its components.

A confusion matrix is a table used to evaluate the performance of a classification model. Its four components are **True Positive (TP)**, **True Negative (TN)**, **False Positive (FP)**, and **False Negative (FN)**.

Q. (15) Differentiate between Custom Code, Low Code and No Code.

Approach	Description
Custom Code	Requires programming skills and allows complete control and customization of the solution.
Low Code	Uses visual tools with some coding to build applications or AI solutions quickly.
No Code	Uses ready-made visual tools and requires little or no programming knowledge.

Q. (16) Explain any three roles of Computer Vision in Self-driving Cars.

1. **Object Detection:** Identifies vehicles, pedestrians, traffic signs, and obstacles.
2. **Lane Detection:** Detects road lanes and helps the car stay in the correct lane.
3. **Traffic Sign Recognition:** Recognises traffic signs and signals to help the car make safe driving decisions.

Q.(17)

- True Positive (TP) = 50
- False Positive (FP) = 40
- False Negative (FN) = 12
- True Negative (TN) = 10

1. Accuracy

Formula:

$$\begin{aligned} \text{Accuracy} &= \frac{TP + TN}{TP + TN + FP + FN} \times 100 \\ &= \frac{50 + 10}{50 + 10 + 40 + 12} \times 100 \\ &= \frac{60}{112} \times 100 = \mathbf{53.57\%} \end{aligned}$$

2. Precision

Formula:

$$\begin{aligned} \text{Precision} &= \frac{TP}{TP + FP} \times 100 \\ &= \frac{50}{50 + 40} \times 100 \\ &= \frac{50}{90} \times 100 = \mathbf{55.56\%} \end{aligned}$$

Answer:

- Accuracy = 53.57%
- Precision = 55.56%

***** ALL THE BEST *****