



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-02

Class: X

Date: 11/09/26

Admission No.

Time : 1 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. (d) Public Communication
3. (d) All of the above
4. (d) All of the above
5. (b) Software
6. (c) Operating System (OS)

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

(1 x 5 = 5)

1. (c) (iii) and (iv)
2. (d) Natural Language Understanding
3. (d) Computer Vision
4. (c) NLP
5. (d) Stock Market Analysis
6. (c) Natural Language Processing (NLP)

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

(1 x 5 = 5)

1. (b) The desired outcome is clear, but the path to achieve it is unknown.
2. (d) Recommendation systems
3. (c) Reinforcement Learning
4. (b) Unlabelled dataset
5. (c) Reward and penalty feedback
6. (d) Clustering

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

(1 x 5 = 5)

1. (d) To assess how well the model performs on unseen data
2. (c) The model performs well on training data but poorly on test data
3. (a) The ideal balance between complexity and generalisation
4. (a) 10%
5. (b) When the dataset is balanced, and both positive and negative classes are nearly equal
6. (b) Precision

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

(1 x 5 = 5)

1. (b) No-Code AI
2. (b) It acts as the backbone, helping AI systems learn and improve
3. (b) Playlists
4. (b) Data Science
5. (d) Data
6. (b) To recognise family members for security purposes

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 7 out of the given 10 questions:

(7 x 2 = 14)

Answers

Q. (2) Write any two barriers in communication.

1. Language barrier
2. Noise or physical barrier

Q. (3) What do you mean by goal setting?

Goal setting is the process of identifying specific objectives or targets that a person wants to achieve within a given period.

Q. (4) Define the term ICT.

ICT stands for **Information and Communication Technology**. It refers to technologies used to collect, store, process, communicate, and share information.

Q. (5) What is Utility software?

Utility software is a type of system software designed to maintain, manage, protect, and improve the performance of a computer system. Examples include antivirus software and disk-cleanup tools.

Q. (6) Define Deep Learning.

Deep Learning is a branch of machine learning that uses **artificial neural networks with multiple layers** to learn patterns and make predictions from large amounts of data.

Q. (7) What do you mean by a testing data set?

A testing data set is a collection of data used to **evaluate the performance of a trained machine learning model** on new, unseen data.

Q. (8) What is Data Science?

Data Science is the field of study that uses **data, statistics, programming, and machine learning** to analyse data and extract useful information and insights.

Q. (9) What is classification in Computer Vision?

Classification in Computer Vision is the process of **identifying and assigning an image to a particular category or class**. For example, classifying an image as a cat or a dog.

Q. (10) What is Google Cloud AutoML?

Google Cloud AutoML is a Google Cloud service that allows users to **build and train machine learning models with minimal coding**, making AI development easier for users without advanced machine-learning expertise.

Q. (11) Why is it important to maintain a balance between bias and variance in a machine learning model?

It is important to balance bias and variance so that the model **neither underfits nor overfits** the data. A good balance helps the model perform well on both training data and new, unseen data.

Answer any 4 out of the given 6 questions:

(3 x 4 = 12)

Q. (12) Differentiate between Data Acquisition and Data Exploration in AI Project Cycle.

Data Acquisition

Data Exploration

It is the process of **collecting data** from different sources.

It is the process of **examining and understanding the collected data**.

Data may be collected through surveys, sensors, websites, databases, etc.

Data is analysed using charts, graphs, statistics, and other techniques.

Its main purpose is to obtain relevant data for the AI project.

Its main purpose is to identify patterns, trends, errors, and relationships in the data.

Q. (13) Explain the three basic layers of Artificial Neural Network.

An Artificial Neural Network generally consists of three basic layers:

1. Input Layer:

It receives the input data or features and passes them to the next layer.

2. Hidden Layer:

It processes the input data using neurons, weights, and activation functions. A neural network can have one or more hidden layers.

3. Output Layer:

It produces the final result or prediction. For example, it may classify an image as a **cat or dog**.

Q. (14) Explain the different evaluation models.

The common **model evaluation methods/metrics** used in AI and machine learning include:

1. **Accuracy:** Measures the percentage of correct predictions made by the model.
2. **Precision:** Measures how many of the items predicted as positive are actually positive.
3. **Recall:** Measures how many of the actual positive items are correctly identified by the model.
4. **F1 Score:** It combines precision and recall into a single score and is useful when both are important.
5. **Confusion Matrix:** It shows the number of correct and incorrect predictions by comparing actual and predicted values.

Q. (15) Explain any three disadvantages of no-code tools.

1. **Limited Customisation:** No-code tools may not provide enough flexibility for complex or highly customised applications.
2. **Limited Control:** Users have less control over the underlying code, algorithms, and technical processes.
3. **Dependency on the Platform:** Users may become dependent on the service provider for updates, features, security, and availability.

Q. (16) Differentiate between Computer Vision and Image Processing.

Computer Vision	Image Processing
Computer Vision enables computers to understand and interpret images and videos.	Image Processing focuses on modifying, enhancing, or analysing images.
It is concerned with understanding the meaning or content of an image.	It is mainly concerned with improving or transforming the image.
Examples include face recognition, object detection, and image classification.	Examples include resizing, cropping, noise removal, and adjusting brightness.

Q.(17)

- True Positive (TP) = 100
- False Positive (FP) = 45 (listed under 'True Negative' header in the 'Predictive Positive' row)
- False Negative (FN) = 65 (listed under 'True Positive' header in the 'Predicted Negative' row)
- True Negative (TN) = 320

1. Accuracy Calculation

$$\text{Accuracy} = \frac{TP + TN}{TP + TN + FP + FN}$$

$$\text{Accuracy} = \frac{100 + 320}{100 + 320 + 45 + 65} = \frac{420}{530} \approx 0.7925 \text{ or } \mathbf{79.25\%}$$

2. Precision Calculation

$$\text{Precision} = \frac{TP}{TP + FP}$$

$$\text{Precision} = \frac{100}{100 + 45} = \frac{100}{145} \approx 0.6897 \text{ or } \mathbf{68.97\%}$$

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