



B.K. BIRLA CENTRE FOR EDUCATION

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



PRE BOARD 3 EXAM : 2025-26

ARTIFICIAL INTELLIGENCE (417)

Class: X (SET 01)

Date: 12-01-2026

Admission No. :

Time : 2 Hrs.

Max Marks: 50

Roll No. :

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):**
 - 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.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
 - i. This section has 16 questions.
 - ii. A candidate has to do 10 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.

$$(4 \times 1 = 4)$$

(i) Which of the following is an interpersonal barrier ?
(a) Social anxiety (b) Poor self esteem
(c) Not willing to work (d) All of these

(ii) Which one of the following is achieved by physical exercise and fresh air, which are part of self management techniques ?
(a) Healthy mind and body (b) Weight
(c) Speaking power (d) Driving skill

(iii) What is important for building self motivation ?
(a) Finding your faults (b) Copying others
(c) Focus on goals (d) Take it easy

(iv) How can an antivirus protect your device ?
(a) It can protect it from overheating (b) It can increase its performance
(c) It can prevent data from getting corrupt. (d) It can backup data

(v) Which of the following is the reason of success of an entrepreneur ?
 (a) Hard work (b) Good money
 (c) Good degree (d) Use expensive material

(vi) Choose the option which is not a sustainable development goal according to the United Nations
 (a) Clean water and sanitation (b) Gender equality
 (c) Population (d) Reduced inequalities

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

(5 x 1 = 5)

(i) is used in agriculture for tasks like monitoring crops, detecting pests and estimating yields.

(ii) What is the primary purpose of AI Project Cycle ?
 (a) To provide a set of random steps for I development
 (b) To systematically plan, develop and deploy AI solutions
 (c) To focus only on the final implementation of AI systems
 (d) To perform data analysis without a structured plan

(iii) What do framework provides in the context of problem solving ?
 (a) Random solutions (b) Step by step guidance
 (c) Legal advice (d) Ethical justification

(iv) focused on enabling machines to understand, analyse and interact with humans through natural language.

(v) Which of the following is NOT a real time application of NLP ?
 (a) Image recognition (b) Chatbots
 (c) Plagiarism checker (d) Sentiment Analysis

(vi) **State True or False :**
 AI can fully replicate the complexity of the human brain.

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

(5 x 1 = 5)

(i) Which machine learning technique is best for grouping customers based on their shopping behaviours ?
 (a) Regressioin (b) Classification
 (c) Association (d) Clustering

(ii) Artificial Neural Networks are inspired by the structure and function of :
 (a) The human brain (b) Quantum computers
 (c) Complex mathematical models (d) High speed processors

(iii) Which of the following is NOT a sub category of supervised learning ?
 (a) Classification (b) Regression
 (c) Clustering (d) Predictive modelling

(iv) Which metric measures how many positive predictions made by the model are actually correct?
 (a) Recall (b) Precision
 (c) Accuracy (d) F1-Score

(v) What does a “perfect fit” represent in model evaluation ?
 (a) The ideal balance between complexity and generalisation
 (b) High bias and low variance (c) Low bias and high variance
 (d) Overfitting the training data

(vi) Which metric is most suitable when you want to minimise false positives ?
 (a) Accuracy (b) Precision
 (c) Recall (d) F1 score

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

(5 x 1 = 5)

- (i) What is True Positive (TP) in the confusion matrix ?
 - (a) When the model predicts a negative value correctly
 - (b) When the model predicts a negative value incorrectly
 - (c) When the model predicts a positive value incorrectly
 - (d) When the model predicts a positive value correctly
- (ii) How is the relationship between model performance and accuracy described ?
 - (a) Inversely proportional
 - (b) Not related
 - (c) Directly proportional
 - (d) Randomly fluctuating
- (iii) Which of the following is true about a confusion matrix ?
 - (a) The confusion matrix shows only the correct predictions of a model.
 - (b) The diagonal elements of a confusion matrix represent the false positives and false negatives.
 - (c) The confusion matrix can be used to calculate accuracy, precision, recall and F1 score.
 - (d) The confusion matrix is used only for regression problems.
- (iv) What technology does Google's search by image feature rely on ?
 - (a) Speech recognition
 - (b) Computer vision
 - (c) Data compression
 - (d) Text based search only
- (v) What is the purpose of facial recognition in smart homes ?
 - (a) To increase internet speed
 - (b) To recognise family members for security purposes
 - (c) To generate digital filters
 - (d) To track weather changes
- (vi) What is the core task of image classification ?
 - (a) Identifying objects and their locations in images
 - (b) Segmenting objects into individual pixels
 - (c) Assigning an input image one label from a fixed set of categories
 - (d) Detecting instances of real world objects in images

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

(5 x 1 = 5)

- (i) How is resolution typically expressed ?
 - (a) By the number of pixels along the width and height, such as 1280 X 1024
 - (b) By the brightness level of each pixel ranging from 0 to 255
 - (c) By the total number of pixels, such as 5 megapixels
 - (d) By the arrangement of pixels in a 2-dimensional grid
- (ii) Which stage of NLP converts speech into text and arranges them into sentences and paragraphs ?
 - (a) Lexical analysis
 - (b) Syntactic analysis
 - (c) Named entity recognition
 - (d) Machine translation
- (iii) What does AI enable machines to do in NLP ?
 - (a) To recognise images
 - (b) To handle complex language, including semantics (meaning), context and structure
 - (c) To make decisions based on data
 - (d) To create new languages
- (iv) keep track of your choices and references, and help in giving relevant recommendations.
- (v) Which step in text processing creates a list of all unique words in the normalised corpus ?
 - (a) Text normalisation
 - (b) Stemming
 - (c) Create dictionary
 - (d) Create document vector
- (vi) What does lexicon refer to in language ?
 - (a) The set of rules for sentence structure
 - (b) The collection of all sounds in a language
 - (c) The complete set of words and their meaning
 - (d) The understanding of word context

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills.

(3 x 2 = 6)

Answer each question in 20-30 words.

Q. (6) Explain any four of 7C's of effective communication.

Q. (7) Explain the ABC of stress management.

Q. (8) "A security breach is an unauthorized access or leak of computer data". Explain two ways in which personal information can be lost or leaked.

Q. (9) Write 4 advantages and 4 disadvantages of being an entrepreneur.

Q. (10) List four sustainable development goals. Explain any two.

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

(4 x 2 = 8)

Q. (11) Write briefly about second and third stage of AI project cycle ?

Q. (12) What is rule based approach ? Write any one drawback of it.

Q. (13) How does reinforcement learning differ from supervised and unsupervised learning ?

Q. (14) How does the F1 score help in evaluating a classification model ?

Q. (15) Enlist two smartphone apps that utilise computer vision technology ? How have these apps improved your efficiency or convince in daily tasks ?

Q. (16) Identify the stage of NLP and explain.

- We are to the zoo going tomorrow.
- We are going to the zoo tomorrow.

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

(3 x 4 = 12)

Q. (17) Will it be valid to say that not all the devices which are termed as "smart" are AI enabled ? Justify this statement. Explain any two examples from the daily life which are commonly misunderstood as AI.

Q. (18) What is Neural network ? Explain the functions of three layers of neural networks.

Q. (19) Identify the type of model (classification, regression, clustering, association model) are the following case studies most likely based on ?

- (a) A bank wants to predict whether a loan applicant will "default" or "non-default" on their loan payments. They have a dataset containing information such as income, credit score, loan amount and employment status.
- (b) A real estate agency wants to predict the selling price of houses based on various features such as size, location, number of bedrooms and bathrooms. They have a dataset containing historical sales data.
- (c) A marketing company wants to segment its customer base into distinct groups based on purchasing behaviour for targeted marketing campaigns. They have a dataset containing information such as purchase history, frequency of purchases and amount spent.
- (d) A grocery store wants to identify association between different products purchased by customers to understand which product are commonly bought together. They have a transaction dataset containing records of items purchased together during each transaction.

Q. (20) In a health diagnostic AI tool, the following confusion matrix was generated :

	Predicted : Yes	Predicted : No
Actual : Yes (Positive)	85 (TP)	25 (FN)
Actual : No (Negative)	30 (FP)	160 (TN)

Calculate the Accuracy, Precision, Recall and F1 score.

Q. (21) You are given two documents :

Document 1 : Dogs are loyal animals.

Document 2 : Cats are loyal too.

Apply all steps of the Bag of Words (BoW) model to convert these into a document vector table.

Clearly list vocabulary and word frequencies.

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