B.K. BIRLA CENTRE FOR EDUCATION

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

PRE BOARD 2 EXAM: 2025-26

SET-01/417

ARTIFICIAL INTELLIGENCE (417)

Class: X (SET 01) **Time: 2 Hrs.**
Date: 15-12-2025 **Max Marks: 50**
Admission No. : …..…… **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 x 1 = 4)**

(i) Which of the following is NOT an element of communication within the communication process cycle ?

(a) Communication channel (b) Receiver
(c) Sender (d) Time

(ii) Mani has her final exam coming up. She creates a study schedule and stick to it, balancing her study time with short breaks. Which self-management skill is she demonstrating ?

(a) Emotional intelligence (b) Managing emotions
(c) Stress management (d) Time management

(iii) What does being self-aware mean ?

(a) Knowing only your strengths
(b) Understanding inner strength, hidden talents, skills and weaknesses
(c) Being unaware of hidden talents
(d) Ignoring weaknesses for a positive self-image

(iv) Which file extension is commonly used for image files ?

(a) .txt (b) .exe

(c) .jpg (d) .mp3

(v) Ravi's customer comes to his store and starts shouting at him. He does not get angry. He listens to what his customer is saying. He is ……..

(a) Hardworking (b) confident

(c) Patient (d) praying new ideas

(vi) What is one of the key objectives of sustainable development in the context of environmental conservation ?

(a) Maximising resource exploitation (b) Ignoring the protection of natural habitats

(c) Promoting unsustainable consumption patterns

(d) Minimizing waste and pollution

Q. (2) Answer any 5 out of the given 6 questions. (5 x 1 = 5)

(i) Which of the following is not a typical stage in the AI Project Cycle ?

(a) Modelling (b) Data exploration

(c) Deployment (d) Data generation

(ii) What is the main focus of the first stage of AI Project cycle ?

(a) Data acquisition and exploration (b) Problem scoping and developing a vision

(c) Model evaluation (d) Deployment of the AI system

(iii) Machines and robots powered by AI can replace human workers, which could lead to ……

(iv) What is the primary domain of application for Bioethics ?

(a) Agriculture (b) Healthcare and life sciences

(c) Information Technology (d) Environmental conservation

(v) State True or False :

The more data we have, the more difficult the analysis will be, leading to more accurate predictions.

(vi) Machine Learning models improve their performance using …….. data.

Q. (3) Answer any 5 out of the given 6 questions. (5 x 1 = 5)

(i) Which of these is an application of Machine Learning ?

(a) Building databases (b) Writing programming code

(c) Manual data processing (d) Recommendation systems

(ii) What type of feedback does reinforcement learning use ?

(a) Labelled data feedback (b) Unlabelled data feedback

(c) Reward and penalty feedback (d) No feedback

(iii) Which algorithm is primarily used in image related tasks like facial recognition ?

(a) Regression (b) ANN

(c) CNN (d) Classification

(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) In a confusion matrix, the rows represent the …….. values of the target variable.

(a) Predicted (b) Actual

(c) Desired (d) Assigned

(vi) Which of this is a classification use case example ?

(a) House price prediction (b) Credit card fraud

(c) Salary prediction (d) None of these

Q. (4) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) Which evaluation technique involves dividing the dataset into training and testing subsets ?
(a) Precision (b) Gradient Boosting
(c) Train-test split (d) Recall

(ii) How is the relationship between model performance and accuracy described ?
(a) Inversely proportional (b) Not related
(c) Directly proportional (d) Randomly fluctuating

(iii) State True or False :
Accuracy refers to the percentage of incorrect predictions made by the model.

(iv) In grayscale images, a pixel value of 255 represents :
(a) Black (b) White
(c) Grey (d) Transparent

(v) Which of the following type of data does Computer Vision primarily work with ?
(a) Audio signals (b) Video and image data
(c) Text data (d) Location data

(vi) Object detection and handwriting recognition are examples of tasks commonly associated with :
(a) Computer Vision (b) Image processing
(c) Both (a) and (b) (d) None of these

Q. (5) Answer any 5 out of the given 6 questions. **(5 x 1 = 5)**

(i) What happens when an image has more pixels ?
(a) The image becomes larger but less detailed
(b) The image appears blurry
(c) The image looks more detailed and closer to the original
(d) The image changes its format automatically

(ii) What is the purpose of Natural Language Processing (NLP) in AI ?
(a) To make decisions
(b) To help machines understand and use human language
(c) To improve computer programming (d) To recognise images

(iii) What does AI typically use to find patterns and solve problems ?
(a) Direct programming (b) Random guesses
(c) Machine learning and deep learning (d) Manual input from humans

(iv) Chatbot is a short form of Chat Robot, also known as ……..

(v) What does TFIDF stand for ?
(a) Total Frequency and Inverse Document Factor
(b) Term Frequency and Inverse Document Frequency
(c) Text Frequency and Inverse Data Frequency
(d) Time Frequency and Inverse Data Frequency

(vi) In which NLP stage is real world knowledge applied to understand the actual meaning of a sentence ?
(a) Pragmatic Analysis (b) Syntactic Analysis
(c) Lexical Analysis (d) Sentiment Analysis

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.

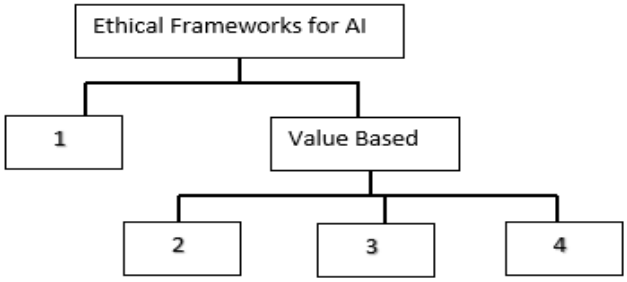
Q. (6) Name and discuss any two types of barrier in communication.
Q. (7) Write and explain any four stress management techniques.
Q. (8) Nitya is experiencing a decline in her laptop's performance. Assist her by recommending methods to enhance the computer's speed and efficiency.
Q. (9) Differentiate between wage employed people and self-employed people.
Q. (10) The ministry of Railways introduced clay pots "Kulhads" to replace plastic and paper cups and to bring back the taste of tradition. Write any two advantages gained by using "Kulhads".

Answer any 4 out of the given 6 questions in 20-30 words each. (4 x 2 = 8)

Q. (11) Write and explain 4W problem canvas used in AI project cycle.
Q. (12) Write the full form of CNN, and explain how a CNN processes data.
Q. (13) What is regression ? Explain any two examples of regression model.
Q. (14) List and explain the different evaluation model.
Q. (15) Differentiate between Computer Vision and Image Processing. (4 points)
Q. (16) Differentiate between stemming and lemmatization.

Answer any 3 out of the given 5 questions in 50-80 words each. (3 x 4 = 12)

Q. (17) Identify the correct terms in place of 1, 2, 3, 4 and explain them.



Q. (18) With a neat diagram, explain the relationship between AI, ML and DL.
Q. (19) What is Neural network ? Explain the functions of three layers of neural networks.
Q. (20) Examine the following case study . Draw the confusion matrix and calculate metrics such as precision, recall and F1-score. A medical diagnosis system is used to classify patients as having a certain disease (1) or not having it (0). Out of 1000 patients:

- True Positive (TP): 120 patients were correctly diagnosed with the disease.
- False Positive (FP): 20 patients were incorrectly diagnosed with the disease.
- True Negative (TN): 800 patients were correctly diagnosed as not having the disease.
- False Negative (FN): 60 patients were incorrectly diagnosed as not having the disease.

Q. (21) Perform text normalisation on the segmented sentences given below:
Document 1: Akash and Ajay are best friends.
Document 2: Akash likes to play football but Ajay prefers to play online games.

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