



B.K. BIRLA CENTRE FOR EDUCATION

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

PRE BOARD 1 EXAM : 2025-26 ARTIFICIAL INTELLIGENCE (417)

Class: X

Date: 04-11-2025

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 x 1 = 4)

- (i) The of meaningful information is conveyed back to the sender to complete the communication cycle.
- | | |
|--------------|--------------|
| (a) Sender | (b) Receiver |
| (c) Feedback | (d) Message |
- (ii) Extrinsic Motivation is reward in terms of :
- | | |
|----------------|----------------------|
| (a) Money | (b) Post |
| (c) Punishment | (d) Both (a) and (c) |
- (iii) What makes you complete work or studies without others cheering you ?
- | | |
|---------------------|-------------------|
| (a) Self confidence | (b) Communication |
| (c) Self motivation | (d) Self esteem |
- (iv) Which of the following refers to an unwanted and unsolicited message ?
- | | |
|-----------------------|-------------------|
| (a) Spam | (b) MBR |
| (c) Boot Sector Virus | (d) None of these |

(v) Susheela decides to sell her company tyres in Sri Lanka. It does not sell and she has a loss. She apologises to the people who work for her. She says she will plan better next time. She

.....

- (a) takes responsibility for your mistakes
 - (b) thinks before making a decision
 - (c) does not give up
 - (d) is creative
- (vi) Which organisation has made the Sustainable Development Goals ?
- (a) United Nations
 - (b) League of Nations
 - (c) UNICEF
 - (d) World Health Organisation

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

(5 x 1 = 5)

- (i) What is the primary focus during the modelling phase of the AI project cycle ?
 - (a) Collecting additional data
 - (b) Testing the final model in real world scenarios
 - (c) Deploying the model for practical use
 - (d) Selecting and evaluating the best algorithm to build the model
- (ii) Which W in 4W canvas explores the reason behind solving the problem ?
 - (a) What
 - (b) Why
 - (c) Where
 - (d) Who
- (iii) Which fields does NLP combine to achieve its goals ?
 - (a) Physics and computer science
 - (b) Linguistics and mathematics
 - (c) Linguistics and computer science
 - (d) Psychology and computer science
- (iv) Which ethical framework is based on respecting and upholding individual rights ?
 - (a) Right based ethical framework
 - (b) Utility based ethical framework
 - (c) Sector based ethical framework
 - (d) Virtue based ethical framework
- (v) Machine Learning focuses on
 - (a) Building circuits
 - (b) Learning from data
 - (c) Simulating Emotions
 - (d) Physical Robots
- (vi) Identify the role of the input layer in a neural network.
 - (a) Computation
 - (b) Receive data
 - (c) Predictions
 - (d) Activation functions

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

(5 x 1 = 5)

- (i) An AI agent playing a game and learning from its rewards and penalties is an example of :
 - (a) Supervised Learning
 - (b) Unsupervised Learning
 - (c) Reinforcement Learning
 - (d) Evolutionary Learning
- (ii) Which of these is an example of classification problem ?
 - (a) Predicting house prices
 - (b) Grouping customers based on spending
 - (c) Determining if an email is spam
 - (d) Predicting the temperature
- (iii) Why is it essential to evaluate a machine learning model using evaluating techniques such as train test split ?
 - (a) To increase the complexity of the model
 - (b) To reduce the size of the training dataset
 - (c) To eliminate the need for testing data
 - (d) To assess how well the model performs on unseen data
- (iv) What is the primary purpose of model evaluation in machine learning ?
 - (a) To reduce the size of the dataset
 - (b) To measure the model's performance and ensure it generalizes well to unseen data
 - (c) To increase the complexity of the model
 - (d) To avoid the need for real world testing

- (v) Which metric is most suitable when you want to minimise false positives ?
 (a) Accuracy (b) Precision
 (c) Recall (d) F1 Score
- (vi) How is the relationship between model performance and accuracy described ?
 (a) Inversely proportional (b) Not related
 (c) Directly proportional (d) Randomly fluctuating

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

(5 x 1 = 5)

- (i) What does Spotify create based on your listening history ?
 (a) Movie suggestions (b) Playlists
 (c) Job recommendations (d) Shopping ads
- (ii) What does CTR stand for in digital advertising ?
 (a) Click Time Rate (b) Customer Tracking Rate
 (c) Click Through Rate (d) Content Time Rate
- (iii) What is the primary goal of Computer Vision ?
 (a) To understand and interpret visual information from the world
 (b) To simulate human brain activity
 (c) To create 3D models from images
 (d) To develop algorithms for natural language processing
- (iv) In grayscale image, what does the darkest shade represent ?
 (a) Total presence of colour (b) Zero value of pixel
 (c) Lightest shade of grey (d) Maximum pixel value
- (v) What is the range of pixel values in an 8-bit image ?
 (a) 0 to 128 (b) 0 to 255
 (c) 1 to 256 (d) 1 to 255
- (vi) Which of the following tasks is typically associated with Computer Vision applications ?
 (a) Data cleaning and preparation (b) Image classification and object recognition
 (c) Web development and frontend design (d) Database management and querying

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

(5 x 1 = 5)

- (i) 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
- (ii) What do personal assistant applications like Siri, Cortana and Alexa primarily use to understand human language ?
 (a) Image recognition (b) Natural Language Processing (NLP)
 (c) Data analysis (d) Machine learning algorithms
- (iii) Which NLP stage arranges words and sentences according to the grammar of the language ?
 (a) Lexical Analysis (b) Syntactic Analysis
 (c) Semantic Analysis (d) Pragmatic Analysis
- (iv) When a system rejects a phrase like “cruel kindness” because it doesn’t make sense, which NLP stage is being applied ?
 (a) Pragmatic Analysis (b) Syntactic Analysis
 (c) Semantic Analysis (d) Sentiment Analysis
- (v) Which character is used in Python to make a single line comment ?
 (a) / (b) //
 (c) # (d) !
- (vi) A powerful tool for interactively developing and presenting Machine Learning projects with the help of Python.

- (a) Anaconda
(c) Mathlab

- (b) lpython
(d) Jupyter

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)** You want to appear confident and enthusiastic about your topic. Describe how you would use three different types of non-verbal communication to achieve this goal.
- Q. (7)** Your friend Soham is always stressed during exam time. He is a sincere and studious student, but the thought of exams creates anxiety in him. What are some stress management techniques that you would suggest to help him ?
- Q. (8)** While working on a project, Aradya's computer unexpectedly restarts multiple times. Upon closer inspection, she finds an unusual number of files that she did not create. What could be the possible reason for this problem and how will remove it ?
- Q. (9)** Explain any four important myths of an entrepreneurship.
- Q. (10)** After the Diwali party in your locality, you saw the waste is not handled properly. How will you contribute to the segregation of the waste so that there is less load on Earth ? Write any four suggestion/steps.

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

(4 x 2 = 8)

- Q. (11)** What is the need of ethical frameworks for AI ? (4 points)
- Q. (12)** Differentiate between Machine learning (ML) and Deep Learning (DL). (4 points).
- Q. (13)** What do you mean by Evaluation of an AI model ? Also explain the concept of overfitting with respect to AI model evaluation.
- Q. (14)** Write and explain any two disadvantages of no code tools.
- Q. (15)** Differentiate between grayscale and RGB images.
- Q. (16)** What are the primary differences between Script bots and Smart bots ? (4 points)

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

(3 x 4 = 12)

- Q. (17)** Akhil wants to learn how to scope the problem for an AI Project. Explain him the following :
- (a) 4W Problem Canvas
- (b) Problem Statement Template
- Q. (18)** What are Neural networks ? Explain all the layers of a neural network.
- Q. (19)** In schools, a lot of times it happens that there is no transport facility available to commute. Such unavailability of school transport is a very common and prominent problem. Hence an AI model is designed to predict if there is going to be school transport available or not. The confusion matrix for the same is :

Confusion Matrix		Prediction	
		Yes	No
Actual	Yes	22	47
	No	12	18

Calculate Accuracy, Precision, Recall and F1 Score for the above problem.

- Q. (20)** What role does Computer Vision play in self driving cars ? Explain any four points in support of your answer.
- Q. (21)** Consider the following two documents :
- Document 1 : ML and DL are part of AI.
- Document 2 : DL is a subset of ML.

Implement all four steps of the Bag of Words (BOW) model to create a document vector table.
Depict the outcome of each step.

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