



B.K. BIRLA CENTRE FOR EDUCATION

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



PRE BOARD - III (2025-26)
ARTIFICIAL INTELLIGENCE (843) / SUBJECT-05

Set-01 / 843

Class : XII A/B/C

Date : 17-01-2026

Admission No.:

Duration: 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 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 questions.
- ii. Marks allotted are mentioned against each 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 (1 x 4 = 4 marks)

i.	How many stages of active listening exist? (a) One (b) Five (c) Two (d) Six	1
ii.	_____ is defined as the drive required to engage in goal-oriented behaviour. (a) Self-awareness (b) Motivation (c) Positive Attitude (d) None of these	1
iii.	_____ personality disorder is characterized by feelings of extreme social inhibition, inadequacy, and sensitivity to negative criticism and rejection. (a) Paranoid (b) Borderline (c) Avoidant (d) Dependent	1
iv.	The contents of cell B2, C2, D2, and E2 are 13, 15, 17, 19 respectively. What will be the value in cell E2, if the formula =MAX(B2:E2) is entered in cell E2? _____ (a) 17 (b) 19 (c) 13 (d) 15	1

v. Jyoti has two people who work for her. Every day, she spends one hour with them to learn about what they've done that day. She _____. 1
 (a) Creates a new product (b) Divides income (c) Manages the business (d) None of these

vi. There is a garbage bin in your canteen and it generally gets filled beyond capacity every day. 1
 What should you do?
 (a) Ask the canteen management to get a bigger bin (b) Talk to your friends about the problem
 (c) Suggest ways to reduce the amount of garbage collected
 (d) Throw garbage on the floor and walk away

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

i. Which is the hardest stage in the foundational methodology of Data Science? 1
 (a) Business Understanding (b) Data collection (c) Modelling (d) Evaluation

ii. Business Sponsors defines the problem and project objectives from a _____ perspective. 1
 (a) Economic (b) Feedback (c) Business (d) Data Collection

iii. Match the following and choose the correct options: 1
 i. Descriptive approach A. Statistical Analysis
 ii. Diagnostic approach B. Current Status
 iii. Predictive approach C. How to solve it?
 iv. Prescriptive approach D. Probabilities of action
 (a) (i)—A , (ii)—B , (iii)—C , (iv)—D (b) (i)—B , (ii)—A , (iii)—D , (iv)—C
 (c) (i)—D , (ii)—B , (iii)—A , (iv)—C (d) (i)—A , (ii)—C , (iii)—B , (iv)—D

iv. Arrange the following statements in order 1
 i: Gaps in data will be identified and plans to fill/make substitutions will have to be made
 ii: Decisions are made whether the collection requires more data or not
 iii: Descriptive statistics and visualization is applied to dataset
 iv: Identify the necessary data content, formats and sources
 (a) i,ii,iii,iv (b) iv,ii,iii,i (c) i,iii,ii,iv (d) ii,i,iii,iv

v. Data Modelling focuses on developing models that are either _____ or _____ 1
 (a) Supervised, Unsupervised (b) Predictive, Descriptive
 (c) Classification, Regression (d) Train-test split, Cross Validation

vi. The field of study that helps to develop techniques to help computers “see” is _____. 1
 (a) Python (b) Convolution (c) Computer Vision (d) Data Analysis

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

i. Task of taking an input image and outputting/assigning a class label that best describes the image 1
 is _____.
 (a) Image classification (b) Image localization (c) Image Identification (d) Image prioritization

ii. Identify the incorrect option: 1
 (i) Computer vision involves processing and analysing digital images and videos to understand their content.
 (ii) A digital image is a picture that is stored on a computer in the form of a sequence of numbers that computers can understand.
 (iii) RGB colour code is used only for images taken using cameras.
 (iv) Image is converted into a set of pixels and less pixels will resemble the original image.
 (a) ii (b) iii (c) iii & iv (d) ii & iv

iii. The process of capturing a digital image or video using a digital camera, a scanner, or other imaging devices is related to _____. 1
 (a) Image Acquisition (b) Preprocessing (c) Feature Extraction (d) Detection

iv. Which algorithm may be used for supervised learning in computer vision? 1
 (a) KNN (b) K-means (c) K-fold (d) KEAM

v. What does "Volume" refer to in the context of big data? 1
 (a) The variety of data types (b) The speed at which data is generated
 (c) The amount of data generated (d) The veracity of the data

vi. Which of the following is a key characteristic of big data? 1
 (a) Structured format (b) Easily manageable size (c) Predictable patterns (d) Variety

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

Assertion and Reasoning questions:

Direction: Questions i-ii, consist of two statements – Assertion (A) and Reasoning (R). Answer these questions by selecting the appropriate option given below:

- a. Both A and R are true, and R is the correct explanation of A.
- b. Both A and R are true, but R is not the correct explanation of A.
- c. A is true, but R is false.
- d. A is false, but R is true.

i. **Assertion (A):** Neural Networks raise concerns about data privacy. 1
Reasoning (R): Without proper safeguards, data used by Neural Networks can be misused, leading to security breaches and identity theft.

ii. **Assertion (A):** The growing adoption of Neural Networks will create new job opportunities in data science, AI research, and machine learning engineering. 1
Reasoning (R): Addressing challenges like data privacy, algorithmic bias, and job displacement requires a responsible approach to AI development, supported by clear regulatory frameworks.

iii. Which of the following is NOT one of the V's of big data? 1
 (a) Velocity (b) Volume (c) Verification (d) Variety

iv. What is a neural network? 1
 (a) A biological network of neurons in the brain. (b) A machine learning model inspired by the human brain. (c) A type of computer hardware used for complex calculations.
 (d) A mathematical equation for linear regression.

v. What are neurons in a neural network? 1
 (a) Cells in the human brain. (b) Mathematical functions that process inputs and produce outputs.
 (c) Nodes that make up the layers of a neural network. (d) None of the above.

vi. What is the role of activation functions in neural networks? 1
 (a) They determine the learning rate of the network.
 (b) They introduce non-linearity, allowing the network to learn complex patterns.
 (c) They control the size of the neural network.
 (d) They define the input features of the network.

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

Assertion and Reasoning questions:

Direction: Questions i-ii, consist of two statements – Assertion (A) and Reasoning (R). Answer these questions by selecting the appropriate option given below:

- a. Both A and R are true, and R is the correct explanation of A.
- b. Both A and R are true, but R is not the correct explanation of A.
- c. A is true, but R is false.
- d. A is false, but R is true.

i. **Assertion (A):** Amazon's Titan is an AI model designed to enhance business and cloud services. 1
Reasoning (R): Amazon's Titan is specifically designed to improve customer reviews and ratings on Amazon's e-commerce platform.

ii. **Assertion (A):** Voice synthesis technology can generate realistic speech, imitating specific voices, accents, or creating entirely new ones. 1
Reasoning (R): Voice synthesis models rely on AI algorithms that analyse and replicate speech patterns to produce natural-sounding audio.

iii. Which machine learning algorithms are commonly used in generative AI? 1
(a) Support Vector Machines (SVM) (b) Decision Trees
(c) Generative Adversarial Networks (GANs) and Variational Auto-encoders (VAEs)
(d) Random Forests

iv. Which of the following best describes data storytelling? 1
(a) Presenting raw data without any analysis
(b) Communicating insights through data in a compelling narrative format
(c) Creating colourful charts and graphs (d) Analyzing data without any visual aids

v. What is the primary goal of data storytelling? 1
(a) To confuse the audience with complex charts (b) To entertain the audience with anecdotes
(c) To communicate insights and findings effectively using data
(d) To hide information from the audience

vi. Which of the following is NOT a component of effective data storytelling? 1
(a) Compelling visuals (b) Clear narrative structure
(c) Overcomplicating the message (d) Insightful analysis

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 marks)

Answer each question in 20 – 30 words.

Q 6. Write a few dos and don'ts of appearing in interviews. 2

Q 7. List the importance of positive thinking. Describe how it can help someone achieve one's goals. 2

Q 8. Describe any three mathematical operators used in OpenOffice Calc. 2

Q 9. Rohan has a successful start-up company. According to him, Decision Making is considered to be one of the important entrepreneurial competencies. Do you agree with Rohan's opinion? Justify. 2

Q 10. Green jobs that contribute to protecting the environment and reducing carbon footprint are becoming a key economic driver of the twenty-first century. Mention a few names of green jobs. 2

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

Q 11. Data is collected from different sources. Explain the different types of sources with example. 2

Q 12. Write down any two algorithms which can be used for object detection. Explain any one. 2

Q 13. Explain the differences between structured and unstructured data. 2

Q 14. Differentiate between (Feedforward Neural Network) FNN and RNN (Recurrent Neural Network). 2

Q 15. Anita works for a social media company that is exploring the use of Generative Adversarial Networks (GANs) to generate personalized content for its users. However, there are concerns about the ethical implications of using AI to manipulate users' perceptions and behaviours. What are some potential ethical concerns associated with using GANs to generate personalized content on social media platforms? 2

Q 16. Describe Freytag's Pyramid and its application in data storytelling. 2

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

Q 17. A retail clothing store is experiencing a decline in sales despite strong marketing campaigns. 4
You are tasked with using big data analytics to identify the root cause.

- i) What types of customer data can be analysed ?
- ii) How can big data analytics be used to identify buying trends and customer preferences?
- iii) Can you recommend specific data visualization techniques to present insights to stakeholders?
- iv) How might these insights be used to personalize customer experiences and improve sales?

Q 18. Describe the structure of a neural network and the role of each component, including neurons, 4
connections, activation functions, and biases.

Give suitable example and diagram of the same.

Q 19. Explain how Meta's LLaMA is unique compared to traditional LLMs with a neat diagram. 4

Q 20. Given a confusion matrix, calculate Precision, Recall, F1 score and Accuracy. 4

$$\begin{bmatrix} \text{TN} = 50 & \text{FP} = 10 \\ \text{FN} = 5 & \text{TP} = 35 \end{bmatrix}$$

Q 21. Explain the steps to create a Data story. 4

***** **BEST OF LUCK** *****