

**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):**
  - (a) This section has 5 questions.
  - (b) Marks allotted are mentioned against each question/part.
  - (c) There is no negative marking.
  - (d) Do as per the instructions given.
7. **SECTION B—SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
  - (a) This section has 16 questions.
  - (b) A candidate has to do 10 questions.
  - (c) Do as per the instructions given.
  - (d) Marks allotted are mentioned against each question/part.

**SECTION A: OBJECTIVE TYPE QUESTIONS****1. Answer any 4 out of the given 6 questions on Employability Skills. (1 × 4 = 4 marks)**

- (i) Amit, a class IX student, has a major test in two days. He has a lot of chapters to cover and feels overwhelmed. Instead of panicking, he decides to break down his study schedule into smaller, manageable parts. He prioritizes the most important topics, creates a time table and makes sure to take short breaks in between to stay focused. He also avoids using his phone or getting distracted by other activities during his study time.

Which self-management skill is clearly visible in the given situation?

- (ii) Which of the following is an example of volatile memory?
- |                          |                      |
|--------------------------|----------------------|
| (a) Hard Disk Drive      | (b) Flash Drives     |
| (c) Random-Access Memory | (d) Read-Only Memory |
- (iii) **Assertion (A):** Sole Proprietorship, Joint Hindu Family and Partnership are categorized under non-corporate business formats.

**Reasoning (R):** Non-corporate business formats are owned, managed and controlled by individuals or a group of individuals without the need for incorporation.

- (a) Both A and R are true and R is the correct explanation for A.
  - (b) Both A and R are true but R is not the correct explanation for A.
  - (c) A is true but R is false.
  - (d) A is false but R is true.
- (iv) What is the first step in the communication process?
- |              |              |              |                       |
|--------------|--------------|--------------|-----------------------|
| (a) Encoding | (b) Decoding | (c) Feedback | (d) Channel Selection |
|--------------|--------------|--------------|-----------------------|
- (v) Sarah often feels overwhelmed by the pressure of her academic responsibilities. She struggles to balance her studies with personal activities such as spending time with friends and engaging in hobbies. Lately, she has been feeling stressed and notices a decline in her academic performance. Which of the following strategies would most effectively help Sarah balance her academic responsibilities with personal activities and improve her overall well-being?
- (a) Increasing social interaction with peers
  - (b) Encouraging participation in extracurricular activities
  - (c) Reducing stress and improving performance
  - (d) Promoting dependency on others for task completion

- (vi) Efforts are made to promote the use of non-renewable energy sources like coal and oil to meet growing energy demands, despite concerns about environmental impact and resource depletion. Which of the following is a non-renewable energy resource?

(a) Solar energy (b) Biomass  
(c) Hydroelectricity energy (d) Nuclear energy

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

**(1 × 5 = 5 marks)**

- (i) **Assertion (A):** Weak AI, often referred to as narrow AI, is characterized by its ability to perform tasks within a limited scope, typically focused on specialized functions.

**Reasoning (R):** Unlike strong AI, which aspires to replicate human-like general intelligence and emotional depth, weak AI is intentionally designed to operate within predefined parameters, optimizing efficiency for specific tasks without the capacity for broader cognitive flexibility.

(a) Both A and R are true and R is the correct explanation for A.  
(b) Both A and R are true but R is not the correct explanation for A.  
(c) A is true but R is false.  
(d) A is false but R is true.

- (ii) You are explaining the process of data gathering to a friend who is learning about data collection for AI projects. Your friend is curious about the different sources from which data can be gathered and asks which one is not typically used. Identify the correct response.

(a) Sensors (b) Surveys  
(c) APIs (d) Speech Recognition

- (iii) **Statement 1:** The probability of rolling an even number on a die is  $1/2$ .

**Statement 2:** A standard die has three even numbers: 2, 4 and 6.

(a) Both Statement 1 and Statement 2 are correct.  
(b) Both Statement 1 and Statement 2 are incorrect.  
(c) Statement 1 is correct but Statement 2 is incorrect.  
(d) Statement 2 is correct but Statement 1 is incorrect

- (iv) Which type of data is represented in the given image—Structured, Semi-Structured or Unstructured?

```
{
  "name": "John Doe",
  "age": 30,
  "isStudent": false,
  "email": "johndoe@example.com",
  "courses": ["Math", "Science", "History"],
  "address": {
    "street": "123 Main St",
    "city": "Anytown",
    "zipCode": "12345"
  }
}
```

- (v) Which of the following tasks is traditional AI suited for?

(a) Creating new images (b) Composing new music  
(c) Predicting stock market trends (d) Writing creative stories

- (vi) Which of the following is a valid Python variable?

(a) 123variable (b) `_my_variable` (c) `for` (d) `my-variable`

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

**(1 × 5 = 5 marks)**

- (i) In Data Analytics, what does EDA stand for?

(a) Exploration Data Analysis (b) Exploratory Data Analysis  
(c) Exploratory Data Attributes (d) Extra Data Attributes

- (ii) Which of the following functions is used in Python to accept an input from the user?  
 (a) `input()` (b) `ask()` (c) `print()` (d) `get()`
- (iii) \_\_\_\_\_ are not used to create background music in multimedia projects.  
 (a) Generative Adversarial Networks (GANs) (b) Recurrent Neural Networks (RNNs)  
 (c) Variational Autoencoders (d) Decision Trees
- (iv) What is Data Acquisition?  
 (a) The process of visualizing data to gain insights  
 (b) The process of collecting raw data from various sources  
 (c) The process of training a machine learning model  
 (d) The process of validating data for calculating accuracy
- (v) You and your friend are discussing number patterns. Your friend asks for a sequence that is a simple arithmetic series. What would your response be?  
 (a) 1, 2, 4, 8, 16 (b) 4, 6, 8, 10 (c) 1, 1, 2, 3, 5, 8 (d) 1, 4, 9, 16, 25
- (vi) Which of the following would access 'mango' in the list `fruits=['apple', 'orange', 'mango', 'grapes']`?  
 (a) `fruits[3]` (b) `fruits[2]` (c) `fruits[-1]` (d) `fruits[0]`

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

**(1 × 5 = 5 marks)**

- (i) You are discussing AI applications with a friend who is curious about creating human-like images. Your friend wants to know if AI can be used to generate realistic human faces. Help your friend by telling the correct response.
- (ii) **Statement 1:** Microsoft Power BI is a data visualization tool.  
**Statement 2:** Microsoft Excel doesn't support data visualization.  
 (a) Both Statement 1 and Statement 2 are correct.  
 (b) Both Statement 1 and Statement 2 are incorrect.  
 (c) Statement 1 is correct but Statement 2 is incorrect.  
 (d) Statement 2 is correct but Statement 1 is incorrect.
- (iii) You are discussing probability with your classmate who wants to know about events that are guaranteed to happen with no chance of failure. What are such events called?  
 (a) Even Chance (b) Likely (c) Certain (d) Impossible
- (iv) Which of the following keywords helps to iterate a list?  
 (a) `for` (b) `continue` (c) `def` (d) `pass`
- (v) Which domain of AI helps in predicting if a message is spam or not?  
 (a) Computer Vision (b) Natural Language Processing  
 (c) Both (a) and (b) (d) Neither (a) nor (b)
- (vi) Explain the steps of an AI project to a classmate who wants to know if data acquisition is the last stage of the AI project cycle.

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

**(1 × 5 = 5 marks)**

- (i) You are helping your friend who is curious about Artificial Intelligence. They want to know about the domain of Artificial Intelligence that is used to teach computers to speak or write like humans. Identify the correct response.  
 (a) Natural Language Processing (b) Computer Vision  
 (c) Data Statistics (d) None of these
- (ii) Which of the following loop types does not exist in Python?  
 (a) `for` loop (b) `while` loop (c) `do-while` loop (d) None of these

(iii) Find the median of the following dataset:

6, 12, 20, 25, 15

(a) 12

(b) 15

(c) 20

(d) 25

(iv) Your friend, who is studying Artificial Intelligence, comes across the term 'Deepfakes' while researching AI applications. They are curious about the field of AI that is responsible for creating these highly realistic but fake images and videos. They want to know the domain that deepfakes are associated with. Identify the correct response.

(a) Generative AI

(b) Computer Vision

(c) Natural Language Processing

(d) None of these

(v) In DIKW model, what does 'W' stand for?

(a) Wisdom

(b) Width

(c) Work

(d) Weight

(vi) Which of the following is not true regarding AI?

(a) It can recognize images.

(b) It has authentic creativity.

(c) It can recommend movies or products.

(d) It can recognize patterns.

### SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills in 20–30 words each.

(2 × 3 = 6 marks)

6. Differentiate between types of stress.
7. Write a few applications of the internet.
8. Your cousin, Priya, is interested in starting her own business. She wants to know what it means to be an entrepreneur. What would you tell her?
9. Provide some examples of the early forms of communication.
10. What are the 4Rs of sustainability?

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

(2 × 4 = 8 marks)

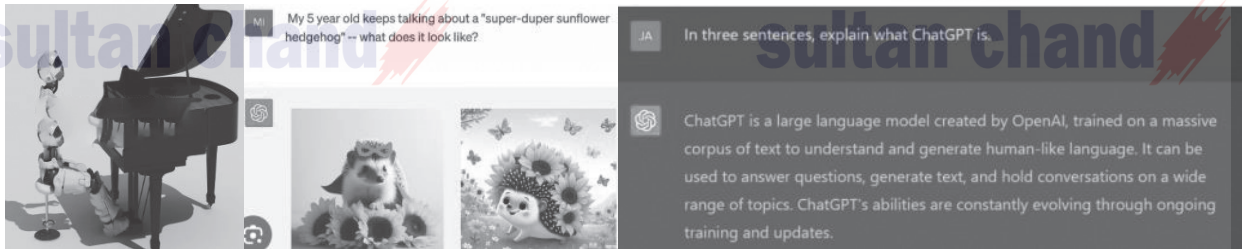
11. Your friend is working on a project but has gathered data from unreliable blogs and social media posts. They are wondering why the results are inconsistent. How would you explain the importance of acquiring data from reliable sources?
12. Navya is learning about events and their probabilities in AI. She is unsure about the difference between Certain and Likely events. Could you explain these concepts to her using examples like the certainty of the sun rising tomorrow and the likelihood of winning a lottery?
13. Your friend, Rohit, is excited to learn about Generative AI after hearing about it from a tech blog. He wants to know any two key advantages of using Generative AI in applications like creating images, music or text. What would you tell him?
14. Differentiate between Statement and Expression in Python.
15. What is 4Ws Problem Canvas in problem scoping?
16. Draw the confusion matrix for the following data:
  - ☐ True positive = 100
  - ☐ True negative = 60
  - ☐ False positive = 20
  - ☐ False negative = 40

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

(4 × 3 = 12 marks)

17. Your friend is confused between rule-based and learning-based approaches of AI modelling. Explain the two concepts using examples.

18. Disha wants to create an AI project. Explain to her the different sources of acquiring data.
19. Identify and explain the types of Generative AI in the given images.



20. Predict the output or error in the following codes:
- (i) `print("python"+str(3))`
  - (ii) `print('1' + 10)`
  - (iii) `for i in range(10):`  
          `print(i*2)`
  - (iv) `print(11//3)`
21. What is Confusion Matrix? What is its use? In the given Confusion Matrix, find the value of True Positive, True Negative, False Positive and False Negative.

	Predicted Positive	Predicted Negative
Actual Positive	50	10
Actual Negative	5	35