

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) Akash has a project deadline in two days but he is feeling overwhelmed by the amount of work left. He has multiple tasks to complete and doesn't know where to start. To manage his time effectively, he decides to break the tasks into smaller chunks and prioritize the most important ones.

Which self-management technique is Akash using to handle the pressure of the project deadline?

- (ii) When you bring the mouse over a file in File Explorer, it will show the details of that file. This is known as _____.

(a) Drag and drop (b) Double click (c) Hover (d) Single click

- (iii) **Assertion (A):** Entrepreneurs must consider stakeholders' interests to ensure long-term success and sustainability of their business.

Reasoning (R): Stakeholders provide essential resources, feedback and support that can influence an entrepreneur's decision-making and business growth.

- (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) _____ is an example of non-volatile memory.

(a) Register (b) Random-Access Memory
(c) Cache (d) Read-Only Memory

- (v) Imagine you're working in an office and need to communicate with a colleague who is in a different room. You can either speak to them directly over the phone, use hand gestures or send them a written message.

Which of these methods would be considered verbal communication?

(a) Gestures (b) Posture (c) Eye contact (d) Telephone calls

- (vi) _____ is the layer which consists of hard rocks and minerals with a thin layer of soil above it.

(a) Biosphere (b) Hydrosphere (c) Atmosphere (d) Lithosphere

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

(1 × 5 = 5 marks)

- (i) **Assertion (A):** Language generation is a task that AI can perform.

Reasoning (R): AI can understand human intuition and make moral decisions.

- (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) Write a Python program to check whether a student has passed or failed based on their marks. The program should display 'Pass' if the student's marks are 50 or above, otherwise it should display 'Fail'. What will be the output of the following if the student's marks are 45?

```
marks = 45
if marks >= 50:
    print("Pass")
else:
    print("Fail")
```

- (a) Pass
- (b) Fail
- (c) Error
- (d) None

- (iii) **Statement 1:** In AI Project Cycle, understanding the problem is a part of problem scoping while collecting relevant data is a part of data acquisition.

Statement 2: Cleaning and analyzing data are referred to as data exploration while building a predictive model is a part of modelling.

- (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 of the following is not a reliable source of data?

(a)



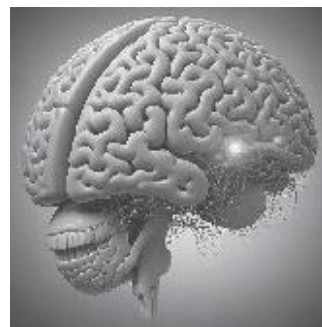
(b)



(c)



(d)



- (v) What is the value of 'x' in the given expression?

```
x = (True and False) or (True and not False)
```

- (a) 0
- (b) 1
- (c) False
- (d) True

- (vi) How can Generative AI assist in personalized learning?

- (a) By standardizing all learning experiences
- (b) By analyzing strengths and weaknesses to customize practice problems
- (c) By replacing teachers entirely
- (d) By providing only theoretical knowledge

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

(1 × 5 = 5 marks)

- (i) _____ data is collected by scraping websites and online sources.
(a) Primary (b) Structured (c) Secondary (d) Unstructured
- (ii) What is the probability of getting heads in a fair coin toss?
(a) 0.25 (b) 0.5 (c) 0.75 (d) 1
- (iii) Which of the following is a potential social impact of Generative AI?
(a) Decreasing computational power usage
(b) Improving scientific discovery processes
(c) Eliminating the need for data in AI
(d) Reducing the need for critical thinking skills
- (iv) What is Data Exploration?
(a) Gathering information to train an AI model (b) Figuring out the problem we want to solve
(c) Discovering patterns in the data (d) Checking the method to solve our problem
- (v) Which working mode allows executing the commands one by one and displaying the results?
(a) Batch Mode (b) Script Mode (c) Interactive Mode (d) Immediate Mode
- (vi) Which of the following is not an identifier?
(a) hi_python (b) hi_py_thon (c) Hello_python (d) @hello_python

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

(1 × 5 = 5 marks)

- (i) What is the value of the given expression?
 $(5 * 5) \% 8$
(a) 3.125 (b) 3 (c) 1 (d) 1.0
- (ii) **Statement 1:** List is used to store key-value pairs.
Statement 2: String is used to store the sequence of characters.
(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 working on a project to create an email filtering system for your team. The goal is to predict whether an incoming email is spam or not. Which domain of AI would you use to predict whether an email is spam or not?
(a) Machine Learning (b) Deep Learning (c) Data Statistics (d) Computer Vision
- (iv) Python is least likely to be used for which of the following?
(a) Web Development (b) AI and Machine Learning
(c) Embedded Systems Programming (d) Scientific Computing
- (v) When a fair die is thrown, what is the probability of getting a multiple of 2?
(a) 1/6 (b) 2/6 (c) 3/6 (d) 1/5
- (vi) You are explaining Generative AI to your sibling who is curious about how realistic images are generated. Which type of model would you use to create realistic images in Generative AI?
(a) Recurrent Neural Networks (RNNs) (b) Generative Adversarial Networks (GANs)
(c) Decision Trees (d) Linear Regression Models

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

(1 × 5 = 5 marks)

- (i) Your friend is excited about using AI in their new project but is concerned about the ethical implications. Why is AI ethics important?
- (a) To protect individuals' privacy rights and prevent data misuse
 - (b) To maximize corporate profits through data exploitation
 - (c) To maintain technological superiority over other nations
 - (d) To increase government surveillance capabilities
- (ii) In Statistics, _____ refers to the likelihood that an event will occur.
- (iii) Which Generative AI application creates new data to add to existing dataset?
- (a) Data Augmentation
 - (b) Text Generation
 - (c) Speech Generation
 - (d) Model Generation
- (iv) In DIKW model, what does 'W' stand for?
- (a) Work
 - (b) Wisdom
 - (c) Width
 - (d) Weight
- (v) What is a key component of data security among the following?
- (a) Sharing data widely
 - (b) Publishing personal information online
 - (c) Allowing open access to data
 - (d) Using strong passwords and encrypting data
- (vi) In Python, how can you convert string "123" into integer?
- (a) `"123".int()`
 - (b) `123.int()`
 - (c) `int("123")`
 - (d) `str("123")`

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. How can one build self-confidence?
- 7. Enlist the essential elements of a communication cycle.
- 8. Your friend is interested in starting their own business but has no clue how to go about it. What are some key characteristics of entrepreneurship that can help them succeed?
- 9. What is CPU and what are its different parts?
- 10. Explain some factors that cause ecological imbalance.

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

(2 × 4 = 8 marks)

- 11. Your friend is new to the field of AI. How would you explain to them the classification of AI into Weak AI and Strong AI? Give examples for both.
- 12. While working on a project, you need to use raw facts and context to extract meaningful insights. How would you differentiate between data and information using an example from your project?
- 13. You are programming a Python script that evaluates conditions based on user inputs. What are the different logical operators you can use in Python to evaluate conditions?
- 14. Explain single-line comments in Python with syntax.
- 15. Explain the role of statistics in disaster management. How can data analysis and statistical methods improve the efficiency and effectiveness of disaster response?
- 16. A classification model was tested with a dataset and the following results were obtained:
 - ☐ True Positives (TP): 50
 - ☐ True Negatives (TN): 30
 - ☐ False Positives (FP): 10
 - ☐ False Negatives (FN): 5Create a confusion matrix.

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

17. Imagine you are working on an AI project for a healthcare application where you need to predict the likelihood of a patient developing a certain disease based on medical data. After training your model, you need to determine how well the model performs before implementing it in the real world.
- Why is it important to evaluate the AI model in this project and what are the common methods of evaluation?
18. In your script, you come across two types of conversions—Implicit Type Conversion (automatic conversion) and Explicit Type Conversion (manual conversion). What is the difference between these two types of conversions?
19. What is Generative AI? Name the types of Generative AI. What is the functionality of each tool shown in the images below?

(a)



(b)



20. Differentiate between the three types of AI that can be used to make a smart home system.
21. Assume that you have a binary classification problem (e.g., Positive or Negative). The confusion matrix might look like this:

| Actual/Predicted | Predicted Positive (Spam) | Predicted Negative (Not Spam) |
|----------------------------|---------------------------|-------------------------------|
| Actual Positive (Spam) | 50 | 10 |
| Actual Negative (Not Spam) | 5 | 100 |

- (i) What does True Positive (TP) in the confusion matrix represent?
- (ii) Which term in the confusion matrix represents the cases that are incorrectly predicted as positive?
- (iii) In a confusion matrix, what does False Negative (FN) refer to?
- (iv) What can we calculate using True Positives and False Positives in a confusion matrix?