SECTION A – OBJECTIVE TYPE QUESTIONS (24 Marks)

Q1. Answer any 4 out of 6 (1×4=4) — Employability Skills

i. During a team discussion, Aditi nods, maintains eye contact, and summarises what others say before giving her opinion. Which skill is she using?

a) Arguing

b) Active Listening

c) Fast Speaking

d) Interrupting

ii. The ability to bounce back quickly after failure is known as _____.

iii. Match the following:

1. Empathy → a. Expressing ideas clearly
2. Communication → b. Understanding others' feelings
3. Adaptability → c. Adjusting to new situations

a) 1→b, 2→a, 3→c

b) 1→c, 2→b, 3→a

c) 1→a, 2→c, 3→b

d) 1→c, 2→a, 3→b

iv. In a word processor, the option used to change spacing between lines is called:

a) Line Spacing

b) Orientation

c) Paragraph Spacing

d) Text Wrapping

v. Assertion (A): Entrepreneurs think creatively to identify opportunities.

Reason (R): An entrepreneur never faces risks in business.

a) A and R both correct, R explains A

b) A and R both correct, R does NOT explain A

c) A correct, R incorrect

d) A incorrect, R correct

vi. Green computing promotes the use of energy-efficient devices. (True/False)

Q2. Answer any 5 out of 6 (1×5=5)

i. Match Column A with Column B:

Column A → Column B

1. What output is expected? → a. Data Understanding
2. Which ML approach will work? → b. Modelling
3. What is the business need? → c. Business Understanding
4. Is the collected data sufficient? → d. Analytic Approach

a) 1→c, 2→b, 3→a, 4→d

b) 1→a, 2→d, 3→c, 4→b

c) 1→d, 2→b, 3→c, 4→a

d) 1→c, 2→a, 3→d, 4→b

ii. A program identifies animals in an image by recognising shapes and patterns. This technology is known as _____.

iii. The growth of data generated by IoT devices mainly represents which Big Data characteristic?

a) Volume

b) Velocity

c) Variety

d) Veracity

iv. A neural network with only one hidden layer is called a _____.

v. What comes in place of (1) and (2)?

Actual	Predicted	Outcome
0	1	(1)
1	1	(2)

a) False Positive, True Positive
b) True Negative, False Negative
c) False Negative, True Negative
d) True Positive, False Positive

vi. A hidden meaning discovered from analysed data is called:
a) Story
b) Insight
c) Event
d) Description

Q3. Answer any 5 out of 6 (1×5=5)

i. _____ is the technique of selecting the most useful variables for ML models.

ii. Identify the pair:
Which labels correspond to (1) and (2) in a confusion matrix for binary classification?
a) TP, FN
b) FP, TN
c) FN, FP
d) TN, TP

iii. Match Column A with Column B:
Column A → Column B

1. Sharpening → a. Dividing an image into segments
2. Smoothing → b. Highlighting edges
3. Segmentation → c. Reducing noise
4. Feature Extraction → d. Selecting unique characteristics

a) 1→b, 2→c, 3→a, 4→d
b) 1→c, 2→d, 3→b, 4→a
c) 1→a, 2→b, 3→d, 4→c
d) 1→d, 2→c, 3→b, 4→a

iv. Which of the following is NOT a Big Data format?
a) SQL tables b) JSON c) Barcode on a book d) MP4 videos

v. Odd one out:
a) Sigmoid b) ReLU c) Softmax d) Forward Propagation

vi. In data storytelling, the middle section where all elements connect is called _____.
a) Core Message
b) Fact
c) Dashboard
d) Situation

Q4. Answer any 5 out of 6 (1×5=5)

i. Assertion (A): The modelling stage creates an AI model using selected features.
Reason (R): Modelling includes summarising results into graphs and charts.
a) A and R correct, R explains A b) A and R correct, R does NOT explain A
c) A correct, R incorrect d) A incorrect, R correct

ii. The smallest unit of a digital image is known as a _____.

iii. Which technology processes data in real time without sending it to a central server?
a) Cloud Computing b) Data Warehousing
c) Edge Computing d) Grid Computing
iv. The mathematical formula that adjusts weights to reduce error is known as the _____.
a) Loss Function b) Activation Function c) Epoch d) Gradient
v. Name the two types of networks used in GANs.
vi. Match the following Generative AI Tools:

1. DALL·E → a. Code Generation
2. Bard → b. Image Generation
3. AlphaCode → c. Text Generation
4. Refusion → d. Audio-Music Generation

a) 1→b,2→c,3→a,4→d
b) 1→c,2→a,3→b,4→d
c) 1→d,2→b,3→c,4→a
d) 1→b,2→d,3→a,4→c

Q5. Answer any 5 out of 6 (1×5=5)
i. The "Business Understanding" step comes after "Deployment". True/False)
ii. Assertion (A): Image resizing helps standardise input for ML models.
Reason (R): It ensures that all images have equal pixel count.
a) A and R correct, R explains A b) A and R correct, R does NOT explain A
c) A correct, R incorrect d) A incorrect, R correct
iii. Identifying the exact boundary of each object in an image is known as:
a) Segmentation b) Classification c) Image Tagging d) Denoising
iv. Match:
Column A → Column B

1. CNN → a. Speech recognition
2. RNN → b. Image analysis
3. Perceptron → c. Simple binary classification

a) 1→b,2→a,3→c
b) 1→a,2→c,3→b
c) 1→c,2→a,3→b
d) 1→b,2→c,3→a
v. In VAEs, the reduced representation of data is known as the _____.
vi. The chart used to show patterns in temperature change across months is _____.
a) Pie Chart b) Histogram c) Line Chart d) Tree Map

SECTION B – SUBJECTIVE QUESTIONS (26 Marks)

Q6. What are adjectives? Give one example and explain.
Q7. Write two ways to reduce stress during exam preparation.
Q8.
a) What is a formula in a spreadsheet?
b) Give one example using cell references.
Q9. Rohan sells handmade keychains. He notices customers like custom names, so he starts offering personalised orders.
a) Which entrepreneurial quality is he showing?
b) Explain why it helps business.
Q10. What is meant by composting? How does it help the environment?

(Attempt ANY 4 × 2 marks each)

Q11. Define "Data Collection". Why is it important in the data science process?
Q12. Mention any two real-life uses of Computer Vision in the transport sector.

Q13. Differentiate between "Structured Data" and "Unstructured Data".

Q14. Given inputs:

$X_1=1$, $X_2=1$

Weights: 3, –4

Bias = +1

Activation: Step Function

Calculate the output.

Q15. How are GANs different from Autoencoders?

Q16. Write the steps to create an effective graph for storytelling.

Attempt ANY 3 × 4 marks each)

Q17. Explain Overfitting and Underfitting with diagrams. How does cross-validation help prevent them?

Q18. A health-monitoring company tracks heart rate, sleep data, and exercise videos from millions of users.

Identify and explain the Big Data characteristics for:

a) Different formats collected

b) Large storage requirements

c) Real-time tracking

d) Incorrect or missing health entries

Q19. Explain how neural networks are used in self-driving cars. Give four points.

Q20. Compare CNN with ANN.

Q21. Explain the following four narrative elements in storytelling:

a) Hook b) Conflict c) Turning Point d) Resolution