

Solutions to Practice Paper–1

SECTION A: OBJECTIVE TYPE QUESTIONS

- 1. Answer any 4 out of the given 6 questions on Employability Skills** (1 × 4 = 4 marks)
- (a) (i) Verbal Communication
 - (b) (ii) Time Management
 - (c) (iii) Setting goals that are specific, measurable, achievable, relevant and time-bound
 - (d) (iii) Single Click
 - (e) (iii) Dynamic adaptability through customer-centric innovation
 - (f) (i) SDG 3 – Good Health and Well-being
- 2. Answer any 5 out of the given 6 questions.** (1 × 5 = 5 marks)
- (a) Computer Vision
 - (b) (iii) A is correct but R is incorrect.
 - (c) (ii) Rule-based systems cannot understand variations in language.
 - (d) Deployment
 - (e) (ii) Image Classification; Object Detection
 - (f) False
- 3. Answer any 5 out of the given 6 questions.** (1 × 5 = 5 marks)
- (a) (ii) Natural Language Processing and Statistical Data Domain
 - (b) (ii) Labelled data
 - (c) (i) 0.90
 - (d) (iv) A is incorrect but R is correct.
 - (e) (ii) CV in Retail
 - (f) 9
- 4. Answer any 5 out of the 6 given questions.** (1 × 5 = 5 marks)
- (a) (i) Virtue-based framework
 - (b) (iii) Only Statement 1 is correct.
 - (c) (iii) 1.5
 - (d) (iii) Unrealistically high-performance scores due to memorization
 - (e) (ii) The total number of pixels, often given as width × height or as a single megapixel value
 - (f) (iii) Text Classification
- 5. Answer any 5 out of the given 6 questions.** (1 × 5 = 5 marks)
- (a) (i) Media familiarity
 - (b) (iii) 3°C
 - (c) (i) Image Segmentation
 - (d) True Positive
 - (e) (ii) The user asks questions beyond its stored responses.
 - (f) (iii) Stemming may produce incomplete words while lemmatization returns meaningful base forms.

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. A conjunction is a word used to join two or more words, phrases or sentences to make the expression clearer and smoother. Common conjunctions include and, but, or, because, so, etc.
For example:
Riya wanted to play but it was raining.
Here, the conjunction 'but' connects two statements that show contrast.
7. The ability to work independently is important because it allows a person to complete tasks without constant supervision, which improves efficiency and productivity. It also helps in building confidence and responsibility, as individuals learn to make decisions and manage their time effectively.
8. Using trusted antivirus software regularly scans and removes harmful programs that can damage files. Additionally, avoiding downloads or email attachments from unknown sources and keeping the system and software updated helps protect the computer from virus and performance issues.
9. (a) **Vision:** Steve Jobs showed a clear vision by focusing Apple's resources on a few innovative products, which helped redefine the company's future.
(b) **Risk-taking:** By investing in new technology like the iPod and iPhone, Jobs took calculated risks that led to massive success and changed the tech industry.
10. (a) Turning off taps tightly after use, especially after washing hands or filling water bottles, to prevent dripping and wastage.
(b) Reporting leaking faucets, toilets or water fountains to school authorities so that repairs can be made promptly and water loss is minimized.

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

11. The Evaluation stage checks how well the AI model performs using testing data. It helps identify errors, accuracy and reliability. A model must be evaluated before deployment to ensure it gives correct results and works effectively in real-world conditions.
12. (a) Hidden Layer
(b) Input Layer
13. Clustering is an unsupervised learning technique that groups similar data points without using labelled outputs. In contrast, classification and regression are supervised learning methods that require labelled data to train the model for predicting categories (classification) or continuous numeric values (regression).
14. Accuracy measures the percentage of total correct predictions and F1 Score combines precision and recall for a balanced evaluation. Both metrics help judge the model's overall performance and effectiveness, highlighting strengths and weaknesses in classification tasks.
15. Image resolution refers to the amount of detail an image holds, measured by the number of pixels. High resolution improves the accuracy of computer vision applications by providing more information to detect and analyze objects.
16. This is Semantic Analysis. It finds the meaning of words in context, helping the system understand whether 'bank' refers to the place where money is stored or to the side of a river.

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

17. (a) The main ethical issues are violation of informed consent, breach of data privacy and misuse of sensitive genetic information without the users' permission.
(b) **Bioethical principle:** Autonomy—individuals must have control over how their biological data is used.
Data privacy principle: Transparency—the company must clearly disclose data usage and obtain explicit consent before sharing.
(c) The company should implement a strict data governance policy, including data anonymization, consent-based sharing and regular third-party audits to ensure accountability in AI model training and data handling.



18. (a) The learning model is Unsupervised Learning.
 (b) The two categories are:
 (i) Clustering
 (ii) Association
 (c) **Clustering:** This method groups similar data points together based on patterns in the data.
Example: Grouping customers based on their shopping behaviour.
Association: This finds relationships between variables in large datasets.
Example: Market basket analysis (customers who buy bread also buy butter).

19. (a) Recommendation System (ML)
 (b) Computer Vision for Autonomous Driving (DL with CNN + sensors)
 (c) Facial Recognition (DL-CNN)
 (d) Handwritten Text Recognition/OCR (DL)

20. (a) Confusion Matrix:

	Predicted Selected	Predicted Not Selected
Actual Selected	50 (TP)	15 (FN)
Actual Not Selected	20 (FP)	35 (TN)

- (b) Accuracy

$$\text{Accuracy} = \frac{\text{TP} + \text{TN}}{\text{Total}} = \frac{50 + 35}{120} = \frac{85}{120} = 0.7083 \approx 70.8\%$$

- (c) Total Incorrect Predictions

$$\text{Wrong} = \text{FP} + \text{FN} = 20 + 15 = 35$$

21. (a) Vocabulary (unique words)
 {machine, learning, helps, computers, learn, deep, is, a, part, of, students, models}
 (b) Document Vector for Document 1
 (D1: machine learning helps computers learn)

Word	machine	learning	helps	computers	learn	deep	is	a	part	of	students	models
Count	1	1	1	1	1	0	0	0	0	0	0	0

Document Vector (D1):

[1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0]

- (c) Bag of Words counts how many times each word appears in a document and represents the document as a numerical vector. This allows text to be used in machine learning models.
 (d) One limitation of Bag-of-Words models:
 It ignores the meaning and context of words; it only counts the frequency.