

# Practice Paper For GATE Data Science and AI (CollegeDekho)

## **Linear Algebra**

1. Which of the following matrices is singular?

- (a)  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
- (b)  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
- (c)  $\begin{bmatrix} 1 & 0 \\ 2 & 0 \end{bmatrix}$
- (d)  $\begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$

2. The eigenvalues of the matrix  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$  are:

- (a) 1, 2
- (b) 1, 3
- (c) 1, 4
- (d) 2, 4

## **Probability and Statistics**

3. The probability of event A happening is 0.3 and the probability of event B happening is 0.5. If events A and B are independent, what is the probability of both A and B happening?

- (a) 0.15
- (b) 0.8
- (c) 0.3
- (d) 0.5

4. The mean of a normal distribution is 50 and the standard deviation is 10. What is the probability of getting a value less than 40?

- (a) 0.16
- (b) 0.34
- (c) 0.68
- (d) 0.84

## **Machine Learning**

5. Which of the following algorithms is used for supervised learning?

- (a) K-means clustering
- (b) Linear regression
- (c) Support vector machines
- (d) All of the above

6. Which of the following algorithms is used for unsupervised learning?

- (a) K-means clustering
- (b) Linear regression
- (c) Support vector machines
- (d) None of the above

### **Artificial Intelligence**

7. What is the difference between artificial intelligence and machine learning?

- (a) Artificial intelligence is the broader field, while machine learning is a subset of artificial intelligence that focuses on developing algorithms that can learn from data.
- (b) Machine learning is the broader field, while artificial intelligence is a subset of machine learning that focuses on developing algorithms that can reason and solve problems.
- (c) There is no difference between artificial intelligence and machine learning.
- (d) None of the above

8. Which of the following is an example of a natural language processing task?

- (a) Image classification
- (b) Machine translation
- (c) Text summarization
- (d) All of the above

### **Data Science**

9. What is the difference between data science and machine learning?

- (a) Data science is the broader field, while machine learning is a subset of data science that focuses on developing algorithms that can learn from data.
- (b) Machine learning is the broader field, while data science is a subset of machine learning that focuses on collecting, cleaning, and analyzing data.
- (c) There is no difference between data science and machine learning.
- (d) None of the above

10. Which of the following is a step in the data science process?

- (a) Data collection

- (b) Data cleaning
- (c) Data analysis
- (d) All of the above

**Additional Questions**

11. What is the difference between a supervised learning algorithm and an unsupervised learning algorithm?
12. What are the different types of neural networks?
13. What is the difference between a decision tree and a random forest?
14. What is the difference between a natural language processing (NLP) task and a computer vision task?
15. What are the ethical considerations that need to be taken into account when developing and using AI systems?

