

## **Problem Solving Through AI**

### **QUESTION BANK -2025**

## **Module 1**

1. Name three industries where machine learning applications have made a significant impact.
2. Provide an example of a machine learning application in the healthcare industry.
3. How has machine learning been utilized in the financial services sector?
4. Explain the role of machine learning in enhancing customer experience in the retail industry.
5. Briefly discuss the applications of machine learning in the manufacturing sector.
6. What are the challenges in implementing machine learning solutions in the hospitality industry?
7. Define the rudiments of machine learning adoption in various industries.
8. Explore practical use cases of machine learning applications in the healthcare industry, emphasizing improved patient outcomes and diagnostics.
9. Discuss the impact of machine learning in optimizing supply chain management within the manufacturing industry.
10. Analyse the role of machine learning in fraud detection and prevention in the financial services sector, considering real-world examples.
11. Explore the integration of machine learning in personalized marketing strategies within the retail industry.
12. Discuss the potential ethical considerations and challenges associated with deploying machine learning in the hospitality sector.

## Module 2

13. Define Churn Analysis in the context of business.
14. What is survival modelling, and how is it applied in churn prediction?
15. Explain the challenges associated with imbalanced data in credit card fraud analysis.
16. What role does Neural Network play in fraud detection?
17. How can machine learning models contribute to reducing churn in subscription-based services?
18. Define the concept of imbalanced data in fraud detection.
19. Explore practical use cases of survival modelling in predicting customer churn for subscription-based services.
20. Discuss the challenges and strategies for handling imbalanced data in credit card fraud analysis.
21. Analyse the impact of Neural Networks in enhancing the accuracy of fraud detection algorithms.
22. Explore the relationship between customer satisfaction and churn analysis, emphasizing practical applications.
23. Evaluate the effectiveness of different machine learning techniques in predicting and preventing credit card fraud.

## Module 3

24. What are the steps involved in handling text data pre-processing?
25. Explain the concept of Bag-of-words in text data analysis.
26. How does Regular Expressions contribute to text data processing?
27. Discuss the significance of Sentiment Analysis in business applications.
28. Define the term 'Word Cloud' and its practical use in data visualization.
29. How can incorrect spellings impact text data analysis?
30. What role do stop words play in text data processing?
31. Explore practical use cases of sentiment analysis in social media monitoring and brand perception.
32. Discuss the challenges associated with handling incorrect spellings in text data and strategies for correction.
33. Analyse the applications of word clouds in summarizing large volumes of text data.
34. Explore the impact of bag-of-words and tokenization in sentiment analysis for customer feedback.
35. Discuss real-world examples where text data pre-processing is critical for accurate analysis.

## Module 4

36. Define the concept of trend analysis in time series forecasting.
37. What is the significance of smoothing techniques in forecasting models?
38. Explain the application of Auto-correlation in time series analysis.
39. How do moving averages contribute to predicting future trends?
40. Briefly discuss the components of the Box-Jenkins method.
41. What is cyclical and seasonal analysis in forecasting?
42. How are ARIMA models applied in financial market predictions?
43. Explore practical use cases of time series forecasting in financial markets, considering applications like stock price prediction.
44. Discuss the challenges and advantages of using moving averages in time series analysis for demand forecasting.
45. Analyse the role of cyclical and seasonal analysis in predicting consumer behaviour in the retail sector.
46. Explore the applications of the Box-Jenkins method in predicting and managing inventory levels.
47. Discuss the impact of time series forecasting in optimizing supply chain management within the manufacturing industry.

## Module 5

48. Define Collaborative Filtering in recommender systems.
49. How does customer segmentation contribute to personalized recommendations?
50. Briefly explain the concepts of User-Based and Item-Based recommendation systems.
51. What is Singular Value Decomposition, and how is it applied in recommender systems?
52. Discuss the role of social networking analysis in enhancing recommender systems.
53. Explain the concept of value in customer segmentation for personalized recommendations.
54. Define the term 'Recommender System' and its practical applications.
55. Explore practical use cases of collaborative filtering in personalized content recommendations for online platforms.
56. Discuss the challenges and strategies associated with implementing user-based and item-based recommendation systems.
57. Analyse the impact of customer segmentation on improving user engagement and satisfaction.
58. Explore the role of singular value decomposition-based recommenders in the entertainment industry.
59. Discuss real-world examples of recommender systems contributing to increased customer loyalty and revenue in e-commerce.