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# D127771(022)

## B. Tech. (Hon's) (Seventh Semester) Examination, Nov-Dec, 2024

**(AICTE Scheme)**

**(Artificial Intelligence)**

## INTELLIGENT SYSTEM AND ROBOTICS

***Time Allowed : Three hours***

***Maximum Marks : 100***

***Minimum Pass Marks : 35***

***Note :*** *Each question contains four parts. part (a) is compulsory each 4 marks and attempt any two from (b), (c) and (d). Each are 8 marks. Include suitable header file in all your program.*

### Unit-I

1. (a) List out any five applications of robotics?

(b) Demonstrate the principles of robotics with suitable example.

(c) Discuss the Societal impacts of intelligent robotics.

(d) Discuss the history of Intelligent System and Robotics.

**Unit-II**

2. (a) What is Sensor fusion techniques?

(b) Illustrate the sensory modalities in robotics.

(c) Explain object Recognition in robotics vision.

(d) Explain localization and mapping algorithms for robot navigation.

**Unit-III**

3. (a) What do you mean by robot navigation?

(b) Explain control architecture of autonomous robot.

(c) Explain Human robot interaction and collaborative robots.

(d) Demonstrate path planning and motion control Techniques for Robot navigation.

**Unit-IV**





4. (a) What do you mean by speech processing?

(b) Explain the techniques of robotics manipulation.

(c) Discuss human robot interaction.

(d) Illustrate the applications in healthcare.

**Unit-V**

5. (a) What do you mean by Robot learning?

(b) Discuss Swarm robotics and collective intelligence.

(c) Explain Imitation learning and transfer learning.

(d) Explain autonomous exploration and mapping in unknown environment.

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# D127772(022)

## B. Tech. (Hon's) (Seventh Semester) Examination, Nov.-Dec. 2024

### (Artificial Intelligence Branch)

### BUSINESS INTELLIGENCE and ANALYTICS

*Time Allowed : Three hours*

*Maximum Marks : 100*

*Minimum Pass Marks : 35*

***Note :*** *Attempt all questions. Part (a) of each question is compulsory and carries 4 marks. Solve any two parts from part (b), (c) & (d) and carries 8 marks each.*

### Unit-I

1. (a) Explain the levels of data models. 4

   (b) What is the role of data-driven decision-making in modern organizations, and how does it improve business outcomes? 8

(c) How does a data warehouse differ from a traditional database, and why is it essential for large-scale data analytics? 8

(d) How do data privacy laws, such as GDPR, impact the way organizations handle and analyse customer data? 8

## Unit-II

2. (a) Discuss any patterns or anomalies in the summary statistics (e.g., skewness or central tendencies) Assume a dataset.

(b) Explain density based techniques for outlier detection in sales data. Give the visualisation of the data. 8

(c) Explain distance based techniques for outlier detection in social media marketing data. Give the visualisation of the data. 8

(d) What are the best practices for designing effective data visualizations? Explain with examples how poorly designed visualizations can lead to misinterpretation of insights. 8





## Unit-III

3. (a) Define clustering in machine learning. Explain how it differs from supervised learning algorithms like regression and classification? 4

(b) Explain the importance of algorithm selection in predictive modeling. Describe factors such as data type, problem context, and interpretability that influence the choice between regression, classification, and clustering techniques. 8

(c) Explain the applications of machine learning in business contexts. Illustrate how algorithms can be applied in churn prediction. 8

(d) Explain customer lifetime value (CLV) estimation, and fraud detection, including the types of data needed and the impact of these applications on business decisions. 8

## Unit-IV

4. (a) Briefly explain the concept of time series forecasting. What makes it suitable for demand prediction? 4

(b) In online grocery store, *FreshMart*, wants to boost sales by identifying which products are frequently bought together so it can provide personalized product recommendations to customers in real time. Select an appropriate model for prediction. 8

(c) Discuss the use of clustering techniques in customer segmentation and profiling. Explain how clustering algorithms like K-means and hierarchical clustering can help businesses tailor marketing strategies for different customer segments. 8

(d) Explain the process of performing sentiment analysis using machine learning. Discuss the difference between rule-based, machine learning-based, and hybrid approaches for analyzing customer sentiment from textual data. 8

## Unit-V

5. (a) What is Prescriptive Analytics, and how does it differ from descriptive and predictive analytics in business intelligence? 4





(b) Explain the role of big data analytics platforms like Hadoop and Spark in processing and analyzing massive datasets. Compare their functionalities, advantages, and challenges, and describe how they are used in modern business analytics scenarios? 8

(c) Discuss the importance of real-time analytics and stream processing in business intelligence. Explain how tools like Apache Flink and Apache Kafka are used to handle real-time data streams. Provide examples of real-world applications where real-time analytics is crucial 8

(d) Examine three emerging trends in business intelligence : artificial intelligence (AI), machine learning (ML), and augmented analytics. Discuss how each trend enhances data-driven decision-making processes and enables businesses to uncover deeper insights from data 8