

MBA-II / SEM-IV / (2024-25)

COMPREHENSIVE CONCURRENT EVALUATION

Faculty Name: Prof. Ujjval More

Subject: Artificial Intelligence in Business Applications Sub Code: 404 SC-BA-06

Sr. No.	Parameter / Component	Marks	Date of Exam/Submission
1	Written Home Assignment	50	03/03/2025
2	Case Study	50	08/03/2025
3	End Semester Examination	50	

Component 1. Written Home Assignment

Instructions:

1. The last date of Submission is 08/03/2025.
 2. Written Home Assignment should be hand written and in your own words; copied Written Home Assignment and case study from peers onother open sources will not be considered for assessment.
 3. The content should cover all the points & justify the marks for Written Home Assignment and case study.
 4. Incomplete Written Home Assignment will not be accepted.
 5. Student name, specialization, written Home Assignment questions must be clearly mentioned.
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Component 1. : Written Home Assignment:

(50 Marks)

- 1) How do we measure if Artificial Intelligence is acting like a human?
- 2) What is the Turing Test in Artificial Intelligence?
- 3) What is the difference between Strong Artificial Intelligence and Weak Artificial Intelligence?
- 4) What are the Examples of AI in real life?
- 5) How to choose an algorithm for a problem?
- 6) Give some real-world applications of AI.
- 7) How do Artificial intelligence, Machine Learning, and Deep Learning differ?
- 8) What are the different domains/Subsets of AI?
- 9) What is Deep Learning, and how is it used in the real world?
- 10) What is the intelligent agent in AI, and where are they used?

Component 2. Case Study:

(50 Marks)

I. Introduction to AI and Programming Tools in Ecommerce

Background: DEF Tech, an online software retailer, wanted to streamline its operations and enhance customer engagement by adopting artificial intelligence (AI) and programming tools. The company faced challenges in managing customer service, personalizing user experiences, and automating repetitive tasks. DEF Tech decided to integrate AI-powered tools and programming solutions to optimize their ecommerce platform and improve efficiency.

Solution: DEF Tech implemented several AI and programming tools to address their pain points:

1. **AI Chatbots for Customer Support:** The company integrated an AI-powered chatbot on their website that could answer frequently asked questions, guide users through product selections, and provide 24/7 customer support. This reduced the workload of customer service agents and improved response times.
2. **Personalized Recommendations:** By using machine learning algorithms, DEF Tech implemented a recommendation engine that analyzed customer behavior and purchase history to offer personalized product suggestions, increasing cross-selling opportunities and customer satisfaction.
3. **Automation Tools for Inventory Management:** Using AI-powered software, DEF Tech automated inventory management. The system used predictive analytics to forecast demand trends and automatically restocked popular items, reducing stockouts and overstocking issues.
4. **Data Analytics and Reporting Tools:** The company adopted programming tools like Python and R to process and analyze large datasets. This allowed them to gain insights into customer behavior, sales trends, and marketing performance, enabling data-driven decision-making.

Results: The integration of AI and programming tools resulted in significant improvements for DEF Tech. Customer satisfaction increased due to faster support responses, and sales grew by 18% thanks to personalized product recommendations. Automation led to a 15% reduction in inventory costs, and data analytics provided actionable insights that guided more effective marketing strategies.

Questions:

1. How did AI-powered chatbots and personalized recommendations contribute to DEF Tech's improved customer engagement and sales growth?
2. In what ways did the use of programming tools for data analysis and inventory automation enhance DEF Tech's operational efficiency and cost management?

II. Leveraging Machine Learning and Data Mining for Ecommerce Optimization

Background: GHI Electronics, an online retailer of consumer electronics, wanted to improve its product recommendations and customer retention. Despite a steady flow of traffic, many customers were abandoning their shopping carts, and sales were not increasing as expected. The company decided to implement machine learning and data mining techniques to better understand customer behavior and personalize their offerings.

Solution: GHI Electronics adopted machine learning and data mining strategies to enhance the customer experience and optimize sales:

1. **Customer Segmentation through Data Mining:** The company used data mining techniques to analyze customer data, such as browsing habits, purchase history, and demographic information. This helped them segment their customers into distinct groups, each with unique preferences and behaviors. By understanding these segments, they could tailor marketing campaigns to meet specific customer needs.
2. **Predictive Analytics for Product Recommendations:** Machine learning algorithms were applied to predict which products a customer was most likely to purchase based on their past behavior and similar customers' actions. These recommendations were displayed on the homepage, product pages, and in follow-up emails, resulting in a more personalized shopping experience.
3. **Churn Prediction Model:** Using machine learning, GHI Electronics built a churn prediction model that identified customers likely to abandon the brand. The model analyzed factors like purchase frequency, average order value, and engagement with promotional emails. The company then reached out to these customers with targeted offers to improve retention rates.
4. **Dynamic Pricing Strategy:** Data mining was also used to analyze competitor prices, customer demand, and seasonal trends. This allowed GHI Electronics to dynamically adjust prices in real-time to remain competitive and maximize profits.

Results: After integrating machine learning and data mining techniques, GHI Electronics saw a 22% increase in conversions and a 17% decrease in cart abandonment. Personalized product recommendations led to higher average order values, and churn rates decreased by 10% due to targeted retention strategies. The dynamic pricing model also improved profit margins by optimizing product pricing.

Questions:

1. How did customer segmentation and predictive analytics help GHI Electronics personalize the shopping experience and drive higher conversions?
2. In what ways did the use of machine learning for churn prediction and dynamic pricing improve GHI Electronics' customer retention and profitability?

Component 3. End Semester Examination:

(50 Marks)