GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Business

Bachelor of Business Administration
Semester End Examination - May 2024

Duration : 180 Minutes
Max Marks : 100

Sem VI - D1UF601T - Marketing Analytics

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) Classify customers as highly satisfied and highly dis-satisfied using descriptive analysis from given satisfaction scores of samples of 10 customers of a business organization measured on a satisfaction scale ranging from 0 to 10. K3 (6)

Customer	***Staisfaction Score***
A	*9*
B	*6*
C	*7*
D	*8*
E	*5*
F	*8*
G	*5*
H	*8*
I	*9*
J	*7*

Mean (μ) 7.2

Standard Deviation (σ) 1.4

2) Describe the methodology for calculating bounce rate on websites and individual pages, including its significance in analyzing user engagement. K3 (9)

3) Analyse the potential long-term effects of frequent discounting strategies on brand image and customer behaviour using the given dataset of a clothing store. K4 (4)

Brand: Clothing Store, **Product Category:** Jeans
Discount Frequency:

- **Regular Price:** $50
- **Sale Price:** $35 (40% discount)
- **Frequency:** Quarterly Sale + Weekly Flash Sales

Month	Sales Volume (Regular Price)	Sales Volume (Discount)	Total Sales
Jan	100	200	300
Feb	80	250	330
Mar	50	300	350
Apr	30	350	380

4) Analyze how does the implementation of predictive analysis in a bank like HSBC contribute to improving decision-making processes and gaining a competitive edge in the financial industry? K4 (8)

5) A company has recently launched a new marketing campaign. Examine how they can use marketing analytics to measure the effectiveness of their campaign in terms of customer acquisition and conversion rates. K4 (8)

6) Sales of a shoe company have been flat lately (refer to data given) as a marketing director the company you need to develop a strategy to boost them. Explain how customer analytics can be utilize customer analytics to improve the sales. K5 (10)

Customer ID	Date	Product ID	Product Name	Price	Quantity
1001	2023-10-25	123	Running Shoe (Blue)	89.99	1
1001	2023-10-25	456	Casual Sneaker (White)	64.99	1
1002	2023-11-01	123	Running Shoe (Blue)	89.99	2
1003	2023-11-10	789	Dress Shoe (Black)	129.99	1
1001	2023-11-15	456	Casual Sneaker (White)	64.99	2
1004	2023-11-20	123	Running Shoe (Red)	89.99	1
1002	2023-11-25	789	Dress Shoe (Brown)	129.99	1
1003	2023-12-01	456	Casual Sneaker (Grey)	64.99	1
1001	2023-12-10	123	Running Shoe (Blue)	89.99	1
1004	2023-12-15	789	Dress Shoe (Black)	129.99	1

7) Evaluate how would a 10% increase in the monthly mobile phone plans by a telecommunications company affect customer behavior and the overall profitability of the company? Provide an analysis of the potential impacts of price changes on customer retention, acquisition, and company revenue within the context of the given data for a telecom company. K5 (10)

Customer ID	Monthly Plan Price (Before, INR)	Monthly Plan Price (After, INR)	Monthly Usage (GB)	Churn Rate (%)
1	₹3,750	₹4,125	10	3.5
2	₹3,375	₹3,712.50	8	2.8
3	₹4,500	₹4,950	15	4.2
4	₹4,125	₹4,537.50	12	3.0
5	₹3,000	₹3,300	6	2.0
6	₹4,875	₹5,362.50	18	4.5
7	₹3,750	₹4,125	10	3.2
8	₹4,125	₹4,537.50	13	3.3
9	₹3,375	₹3,712.50	7	2.5
10	₹4,500	₹4,950	14	4.0

8) **Application of AI and ML by Walmart to Enhance Retail Sales:** Walmart, an international supermarket chain established in 1962 and headquartered in Arkansas, United States, has found many ways to constantly reinvent itself using Machine Learning (ML) and Artificial Intelligence (AI). Even though the nature of retail has been largely traditional, Walmart uses a system called Eden to categorize the freshness of fruits and vegetables and the timing until which these go bad. The staff takes the photograph of fruits and vegetables on mobile phone and the system will categorize the produce into different categories for the store category manager to use different levels of markdown prices on them or discard the stale items at once. Walmart uses this system, Eden, and the item categorization for supply chain management. Walmart has been pioneering in incorporating Machine Learning and Artificial Intelligence to improve customer experience as well retain loyal customers improving long-term viability of their business amidst competition from online retailers. K5 (15)

Question: With refrence to above caselet discuss how might Walmart further leverage its AI and ML capabilities, such as the Eden system, to not only optimize supply chain management and reduce waste but also personalize the in-store shopping experience for customers, ultimately leading to increased sales and customer loyalty in the face of growing competition from online retailers?

9) Analyse the business research problem that attempts to predict job satisfaction based on four independent variables: relationship with supervisor, overall quality of work environment, total hours worked per week, and opportunities for advancement. Propose the multiple regression model to predict job satisfaction using the given data, considering the 19 observations provided. K6 (12)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.952
R Square	0.906
Adjusted R Square	0.880
Standard Error	8.03
Observations	19

ANOVA

	df	SS	MS	F	Significance F
Regression	4	8748.967	2187.242	33.89	0.0000046
Residual	14	903.664	64.547		
Total	18	9652.632			

	Coefficients	Standard Error	T Stat	P value
Intercept	-2.6961	13.005	-0.21	0.838
Relationship with Supervisor	6.9211	3.774	1.83	0.080
Overall Quality o6f work environment	6.081	1.55	3.92	0.0015
Total Hours worked per week	0.106	0.1925	0.55	0.589
Opportunities for Advancement	0.388	1.632	0.24	0.8155

10) **Read the case and answer questions below:** K6 (18)

Afina Textiles is an apparel retailer with a 50-year-old legacy started by the father of Mr. Kabir as a small outlet in his hometown in Paramakudi. Since then, the store has grown exponentially and today Mr. Kabir manages over 20 stores spread over 10 cities in the southern states. He has inducted his daughter Sheena, an MBA graduate from Wharton as the Marketing Director of the enterprise. A year into her present role, Sheena feels that the store would benefit from opening new channels (online) and adopting a data driven decision making system for their demand management, sales and promotion strategies. She engages you as a consultant and shares the existing data model of their present billing, purchase and inventory databases which are standalone systems for you to understand the variables available and the logical structure of how this data is linked to one another. She wants to incorporate and enterprise-wide system and as first level discussion has shared some of her questions to you for you to prepare responses.

Questions:

a. Suggest a suitable technique to forecast sales across different categories ranging from ethnic, formal, casual and sport accounting for changes in seasons. (6 marks)

b. As seasons changes, there are different volumes of unsold inventories across these categories. These need to be cleared before the next season as the fresh stock tuned to the latest fashion will come in. Suggest a suitable pricing mechanism for pricing the product and how markdown pricing can be effectively employed for this situation (6 marks)

c. How can Afina use the data presently available to design a promotional campaign and improve the customer experience while shopping? (6 marks)