MBA Degree (FT/PT) III/V Semester University End Semester Examination- November, 2023

21.371-0303/21.372-0502: Business Analytics

(Regular and Supplementary)

Time: 3 Hours   Max. Marks: 50

Course Outcomes: On completion of the course, the student will be able to:

CO1	Recall descriptive statistics, various methods, analytical methods, various distributions, regression and methods, correlation and techniques, forecasting etc
CO2	Enable students to recognise, understand and apply the language, theory and models of the field of business analytics; foster an ability to critically analyse, synthesise and solve complex unstructured business and management problems; encourage an aptitude for business improvement, innovation and entrepreneurial action.
CO3	Identify and describe complex business problems in terms of analytical models, Apply appropriate analytical methods to find solutions to business problems that achieve stated objectives. • Translate results of business analytic projects into effective courses of action. Demonstrate ethical decision-making in structured or unstructured and ambiguous situations. Apply descriptive, predictive, and prescriptive analytics to business problems for input into management decision-making processes. • How tools like Excel, python, SAS and R help with conducting analytics
CO4	Analyse and evaluate appropriate business strategies, practices, and theories that inform and guide organizations to ensure sustainability. To become familiar with the processes needed to develop, report, and analyze business data. To analyze the different types of analytics and the tools available to analyse them.
CO5	Evaluation of various alternatives and select the best alternatives, conduct what if analysis, Scenario Analysis and evaluate alternatives. Design a solution to a business dilemma, incorporating management practices and theories with principles of marketing, economics, accounting, operations management, and finance.
CO6	Create business reports that effectively communicate business strategies, practices, and goals using emerging technology and management theories. To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making. To be able to choose suitable business analytics methods and use them in practice; be able to draw logical conclusions and give recommendations in strategic decision-making situations based on output from decision support methods; be competent in applied business research; be able to systematically analyze discipline-related real type problems; be able to draw well justified conclusions and analytically discuss the implications of produced research results; be able to produce an academic research report according to the principles for good scientific conduct; have skills in responsible business skills and a profound understanding on the discipline-specific responsibility issues; be able to critically evaluate consequences of business decisions from a responsibility perspective

BL — **Bloom's Taxonomy:** (L1- Remember, L2 - Understand, L3 – Apply, L4-Analyse, L5-Evaluate, L6-Create)

PART A
(Answer ALL questions. Each question carries 2 marks)

Q. Nos.	Questions	Marks	BL	CO
1	Differentiate between histogram and bar chart.	2	1	1
2	What are the characteristics of Big data?	2	2	2
3	What are the different distance measures in data science.	2	2	1
4	List two differences between goal programming and linear programming.	2	1	3
5	Enumerate four Python libraries commonly employed for data analysis.	2	1	3

(5X2=10 marks)

PART B
(Answer ANY FIVE Questions. Each question carries 4 marks)

Q. Nos.	Questions	Marks	BL	CO
6	Illustrate the significance of forecasting in the retail sector by employing various techniques.	4	4	6
7	Consider yourself a data analyst for a pharmaceutical company involved in a study on the efficacy of a new drug. Evaluate the significance of discerning between correlation and causality within this specific context.	4	4	4
8	In your role as the marketing manager for a retail company, evaluate the strategic application of cluster analysis in effectively segmenting your customer base.	4	3	4
9	In the role of a healthcare administrator responsible for optimizing the patient care process in a hospital, elucidate the concept of Value Stream Mapping and explain how its implementation can augment the efficiency and quality of healthcare delivery within the hospital setting.	4	3	4
10	Envision yourself as a city planner with the responsibility for traffic management. You've observed an increase in traffic accidents at a specific intersection and suspect that it could be attributed to both driver behavior and road conditions. In your role as an analyst, to devise effective safety measures, your objective is to explore the connection between driver behaviour and road conditions (both measured as continuous data) and the incidence of accidents (categorized as a binary outcome: accident or no accident). Clarify the statistical test you would utilize for drawing inferences and offer a rationale for your selection.	4	4	5

11	Given your role in a real estate agency, with the help of an example, critically evaluate the application of multiple regression analysis in predicting house prices.	4	5	5
12	In the capacity of an HR manager concentrating on talent acquisition, the primary emphasis is on making well-informed decisions concerning candidate selection. Elaborate on the concept of the Analytic Hierarchy Process (AHP) and provide a practical illustration of its application within the recruitment process, elucidating how it can streamline the process of candidate evaluation and selection.	4	5	3

(5X4=20 marks)

PART C
(Answer ANY TWO questions. Each question carries 10 marks)

Q. Nos.	Questions	Marks	BL	CO
13	Consider being employed by a fitness application company, FitWell, specializing in monitoring users' exercise routines. The collected data encompasses metrics such as the weekly frequency of workout sessions and the total calories expended during an individual session. The data science team has operationalized a k-Nearest Neighbors (kNN) classification algorithm to anticipate the likelihood of a user attaining their fitness objectives, utilizing these two specified features. Below is a sample dataset for training the kNN model: 	10	6	4, 5

Customer	User Sessions per Week	Calories Burned	Achieved Goals
Ambily	5	300	Yes
Meenakshi	3	200	No
Niya	6	400	Yes
Charan	4	250	Yes
Amir	2	150	No

Now, consider a new user, Ramaswamy, who has 4 workout sessions per week and burns 280 calories per session. Use the kNN algorithm with k=3 to predict whether Ramaswamy is likely to achieve their fitness goals or not.

| 14 | As a marketing analyst working with sales data, how would you use central tendency, percentiles, box plots, variance, standard deviations, covariance, and correlation coefficients to analyze and gain insights into the sales performance of a retail company? Provide a hypothetical scenario or example to illustrate your approach. | 10 | 5 | 3, 5 |

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