

INDIRA UNIVERSITY, PUNE

SCHOOL OF BUSINESS-MBA

Backlog Examination (2025 Pattern) April – 2026 - Semester – I

Subject Name: Business Analytics Foundation
Subject Code: 25MBA105

Max. Marks: 25
Time: 1:30 Hrs.

Instructions:

1. All questions are compulsory. Kindly read the detailed instructions for each question.
2. Question 1,2 & 3 carry 5 marks each.
3. Question 4 carries 10 marks.

CO #	Cognitive Ability	Course Outcome
CO3	APPLYING	Utilize basic tools of business analytics, such as data exploration and visualization tools, to perform basic exploratory data analysis and data cleaning tasks.
CO4	ANALYSING	Break down business problems into key questions and analyze data to derive meaningful insights for decision-making in various business domains like marketing, finance, HR, Operations.
CO5	EVALUATING	Assess the effectiveness of different data-driven strategies and analytical techniques in improving business performance across different sectors through case studies.
CO6	CREATING	Design and propose data-driven solutions and strategies to address complex business challenges, integrating knowledge from marketing, finance, HR, Operations.

Q1.	Attempt any 1 out of 2 Questions:	(5 Marks)	CO3
a)	A bank's loan dataset contains missing income details, inconsistent approval labels, and some extreme loan amounts. Explain the EDA steps you would take to clean this data and make it suitable for analysis.		
	OR		
b)	An e-commerce company gives you shopping cart data containing customer session time, payment mode, and cart value. Some records are missing or repeated. Explain how you would use EDA to clean and visualize this data to understand online customer behavior.		

Q2.	Attempt any 1 out of 2 Questions: (5 Marks) a) A large IT consulting firm is experiencing low employee engagement scores in remote teams. Explain how each type of analytics can help the HR department measure engagement, find underlying reasons, predict risk areas, and prescribe suitable interventions. OR b) A renewable energy startup is planning to enter the rooftop solar market for small businesses in India. Explain how each type of analytics can help the firm assess market potential, evaluate financial viability, predict adoption rates, and decide on an entry strategy.	CO4																																																
Q3.	Attempt any 1 out of 2 Questions: (5 Marks) a) You are given the exam performance of students from five different courses. <table><tr><th>Course</th><th>Avg. Marks (%)</th><th>Pass Rate (%)</th><th>No. of Students</th></tr><tr><td>BBA</td><td>78</td><td>95</td><td>60</td></tr><tr><td>MBA</td><td>82</td><td>98</td><td>45</td></tr><tr><td>B.Com</td><td>75</td><td>92</td><td>70</td></tr><tr><td>B.Tech</td><td>80</td><td>96</td><td>50</td></tr><tr><td>BA</td><td>72</td><td>88</td><td>65</td></tr></table> Task: Create two charts comparing performance among courses. Label, title, and write 2–3 lines of insight. OR b) You are provided with air quality data for five cities in March. <table><tr><th>City</th><th>AQI (Air Quality Index)</th><th>PM2.5 (µg/m³)</th><th>Green Cover (%)</th></tr><tr><td>Delhi</td><td>210</td><td>150</td><td>8</td></tr><tr><td>Mumbai</td><td>160</td><td>95</td><td>12</td></tr><tr><td>Pune</td><td>90</td><td>60</td><td>18</td></tr><tr><td>Chennai</td><td>130</td><td>85</td><td>15</td></tr><tr><td>Bengaluru</td><td>100</td><td>70</td><td>20</td></tr></table> Task: Visualize AQI and green cover with two basic charts. Label, title, and provide 2–3 lines of Insights.	Course	Avg. Marks (%)	Pass Rate (%)	No. of Students	BBA	78	95	60	MBA	82	98	45	B.Com	75	92	70	B.Tech	80	96	50	BA	72	88	65	City	AQI (Air Quality Index)	PM2.5 (µg/m³)	Green Cover (%)	Delhi	210	150	8	Mumbai	160	95	12	Pune	90	60	18	Chennai	130	85	15	Bengaluru	100	70	20	CO5
Course	Avg. Marks (%)	Pass Rate (%)	No. of Students																																															
BBA	78	95	60																																															
MBA	82	98	45																																															
B.Com	75	92	70																																															
B.Tech	80	96	50																																															
BA	72	88	65																																															
City	AQI (Air Quality Index)	PM2.5 (µg/m³)	Green Cover (%)																																															
Delhi	210	150	8																																															
Mumbai	160	95	12																																															
Pune	90	60	18																																															
Chennai	130	85	15																																															
Bengaluru	100	70	20																																															

Q4.	Attempt the following caselet and answer the given subquestions: Operations & Supply Chain Analytics: Building a Smart, Green Logistics Network Context: AgroKart Foods Pvt. Ltd. is a logistics company that helps farmers send fruits and vegetables from farms to markets across Maharashtra. The company uses trucks and cold-storage containers to keep the produce fresh. Recently, the management noticed that about 18% of the products get spoiled before reaching the market. The main reasons are transportation delays, poor route planning, and cold-chain failures (when the cooling system in trucks doesn't work properly). The operations team now wants to create a smart analytics system that can track and improve the movement of goods in real time. The idea is to use IoT sensors (Internet of Things), GPS-based route data, and vendor performance information to make deliveries faster, cheaper, and more environment-friendly. Using Analytics to Improve the Supply Chain AgroKart plans to connect all trucks and warehouses using IoT sensors. These sensors will continuously collect data such as: - Temperature inside the truck (to check cooling) - Fuel consumption (to monitor cost and carbon footprint) - GPS location and travel speed (to track real-time movement) - Delivery time and vendor performance (to measure efficiency) This data will then be displayed on a Power BI or Tableau dashboard, where the operations manager can easily see: - Which trucks are delayed - Where temperature is above the safe limit - Which routes are most efficient - How much fuel or CO₂ emission each truck produces Using predictive analytics, the system can also forecast possible problems—for example, which routes are likely to face delays due to traffic or weather. Using prescriptive analytics, it can suggest alternate routes or reschedule pickups automatically to reduce wastage. Sustainability and Green Data Governance AgroKart not only wants faster delivery but also wants to become a green and responsible company. This means the analytics system should help reduce pollution, save energy, and avoid unnecessary waste. To ensure this, the company will follow Green Data Governance principles: - Use data responsibly: Only collect data needed for improving logistics. - Respect vendor privacy: Avoid over-tracking small transport partners.	CO6
-----	--	-----

	Monitor sustainability KPIs: Such as CO₂ emissions, fuel efficiency, delivery time, and wastage levels. Share transparent reports: Use dashboards to show how AgroKart is improving sustainability each month. For example, Power BI visuals can show: A line chart of monthly CO₂ reduction A bar chart comparing fuel use across routes A pie chart of wastage before and after implementing analytics This approach helps AgroKart improve profit, reduce waste, and protect the environment — all while keeping farmers and partners happy. Expected Outcomes With this analytics model, AgroKart can achieve the following: Reduce wastage from 18% to below 10% Lower fuel cost and emissions through better routes Ensure freshness of fruits and vegetables during transport Promote sustainability through green data practices Build trust among farmers, customers, and partners Thus, AgroKart can become a model example of how technology, data, and ethics work together for a smarter and greener supply chain. (a) Design a simple data-driven supply-chain model for AgroKart to improve efficiency and reduce waste. Explain briefly in your answer: What types of data should be collected. What tools and visuals can be used to monitor performance. What KPIs or results will show that performance is improving. (5 Marks) (b) Suggest some ethical and sustainable data practices for AgroKart. Explain briefly: (5 Marks) How to ensure vendor privacy and fair monitoring. How to include sustainability indicators like CO₂ emission and fuel use. How such green analytics can build trust and support eco-friendly growth.	
--	--	--
