

**INDIRA UNIVERSITY, PUNE**

**SCHOOL OF BUSINESS-MBA**

*Term End Examination (2025 Pattern) December – 2025 - Semester – I*

**Subject Name: Business Analytics Foundation**

**Max. Marks: 25**

**Subject Code: 25MBA105**

**Time: 1:30 Hrs.**

**Instructions**

- All questions are compulsory. Kindly read the detailed instructions for each question.
- Question 1,2 & 3 carry 5 marks each.
- 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.	<b>Attempt any 1 out of 2 Questions:</b>	<b>(5 Marks)</b>	CO3
a)	A company’s HR department gives you employee data with age, department, experience, and salary. Some age values are missing, and salary data seems inconsistent. Explain how EDA can be used to explore, clean, and summarize this dataset to find patterns in attrition.		
b)	A health clinic collects patient feedback on waiting time, doctor rating, and service quality. Some responses are missing or incorrectly recorded. Explain how EDA could be used to handle such missing values and to summarize patient satisfaction.		
Q2.	<b>Attempt any 1 out of 2 Questions:</b>	<b>(5 Marks)</b>	CO4
a)	A leading Indian smartphone brand notices that sales of its mid-range models have fallen in Tier-1 cities but increased in Tier-2 towns. Using different types of analytics, explain how the company can understand this shift and make marketing decisions.		

b)	<p>A dairy products company faces delays in cold-chain delivery during summer months, leading to spoilage in some regions. Explain how each type of analytics can help the company monitor logistics data, diagnose inefficiencies, forecast demand, and prescribe improvements.</p>																																																	
Q3.	<p><b>Attempt any 1 out of 2 Questions: (5 Marks)</b></p> <p>a) You are provided with data showing the advertising spend and leads generated from five different marketing channels in February.</p> <table border="1"> <thead> <tr> <th>Channel Ad</th> <th>Spend(₹000)</th> <th>Leads Generated</th> <th>Conversion Rate (%)</th> </tr> </thead> <tbody> <tr> <td>Social Media</td> <td>80</td> <td>320</td> <td>15</td> </tr> <tr> <td>TV Ads</td> <td>120</td> <td>400</td> <td>10</td> </tr> <tr> <td>Print Media</td> <td>60</td> <td>150</td> <td>8</td> </tr> <tr> <td>Email</td> <td>30</td> <td>100</td> <td>20</td> </tr> <tr> <td>Influencer Marketing</td> <td>90</td> <td>350</td> <td>18</td> </tr> </tbody> </table> <p>Task: Draw any two basic charts (Bar, Pie, or Line) to represent the data visually. Label all axes and give appropriate titles. Write 2–3 lines interpreting one of the charts.</p> <p>b) You are given the quarterly revenue and profit data for five divisions of a company.</p> <table border="1"> <thead> <tr> <th>Division</th> <th>Revenue (₹ Cr)</th> <th>Profit (₹ Cr)</th> <th>Quarter</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>80</td> <td>12</td> <td>Q1</td> </tr> <tr> <td>South</td> <td>65</td> <td>9</td> <td>Q1</td> </tr> <tr> <td>East</td> <td>55</td> <td>6</td> <td>Q1</td> </tr> <tr> <td>West</td> <td>70</td> <td>10</td> <td>Q1</td> </tr> <tr> <td>Central</td> <td>60</td> <td>8</td> <td>Q1</td> </tr> </tbody> </table> <p>Task: Draw two charts to visualize revenue and profit across divisions. Provide titles and 2–3 lines of insight.</p>	Channel Ad	Spend(₹000)	Leads Generated	Conversion Rate (%)	Social Media	80	320	15	TV Ads	120	400	10	Print Media	60	150	8	Email	30	100	20	Influencer Marketing	90	350	18	Division	Revenue (₹ Cr)	Profit (₹ Cr)	Quarter	North	80	12	Q1	South	65	9	Q1	East	55	6	Q1	West	70	10	Q1	Central	60	8	Q1	CO5
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Q4.	<p><b>Attempt the following caselet and answer the given subquestions: (10 Marks)</b></p> <p><b>Designing an Ethical and Data-Driven Marketing Campaign for GlowMate Cosmetics</b></p> <p>Context: GlowMate Cosmetics is a fast-growing Indian skincare brand known for its natural and affordable products. The company has built a strong digital presence through influencer marketing and social media advertisements. To reach younger consumers, GlowMate uses automated ad algorithms that analyze users’ age, gender, and past purchase data to suggest relevant beauty products. While this strategy has increased sales and online engagement, the company recently faced criticism on social media for biased advertising. Many customers complained that only women from Tier-1 cities were seeing</p>	CO6																																																

premium product ads, while men and Tier-2 or Tier-3 audiences were largely ignored. The management team realized that the algorithm was unintentionally favoring certain demographics, which could damage the brand’s reputation and long-term customer trust. The marketing head now plans to redesign GlowMate’s digital marketing strategy using a more transparent, ethical, and inclusive analytics approach. The goal is not only to improve the campaign’s return on investment (ROI) but also to ensure that the data-driven decisions respect fairness, privacy, and diversity. The new strategy will involve collecting a wider range of data such as location, customer sentiment, age, and spending power—without breaching user privacy. Instead of targeting only past customers, the analytics team will build a broader audience model. Using Power BI dashboards, the marketing analysts will visualize campaign performance across demographic segments (gender, city tier, and income group) and identify under-represented groups. They also plan to apply predictive analytics to forecast which audience segments are likely to respond positively to new product launches. The team intends to monitor campaign performance weekly and adjust budget allocation dynamically toward high-conversion but ethically fair segments. For example, if Tier-2 city engagement improves after inclusive targeting, more funds can be directed to those regions. To ensure accountability, GlowMate will introduce a Data-Ethics Governance Framework. This framework will define rules for data collection, algorithm use, and ad placement. Every new campaign will undergo an “Ethical Review Check” before going live. The company’s analytics dashboard will feature a section called the Ethical AI Dashboard, which will display alerts or warnings if any demographic is being over- or under-targeted. The ethical review team will include members from marketing, analytics, and compliance departments who will jointly verify fairness indicators and privacy compliance. By combining analytics and governance, GlowMate aims to become a responsible data-driven brand that uses insights to create both profit and positive social impact.

(a) Design a simple data-driven marketing analytics model that helps GlowMate improve ROI while ensuring fairness and inclusivity. Explain what kind of data should be collected. Describe which charts or visuals can show campaign reach and conversion by demographic group. [ 5 Marks]

(b) Suggest how GlowMate can build an Ethical AI Dashboard to monitor fairness and privacy in its campaigns. Explain how this dashboard can help identify if one group is under-represented or over-targeted. Briefly discuss why maintaining ethical transparency will support both brand trust and long-term profitability. [ 5 Marks]

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