**Fundamentals of Big Data & Business Analytics**

**December 2023 Examination**

**1. There are various types of business analytics procedures that can be performed on a problem statement. Assume you’re working with a low-cost airline based in India as an analytics advisor. Define and state 3 different use cases of your choice that the airline company could use. Mention briefly about how the different types of business analytics procedures could be used in each of the use cases. (10 Marks)**

**Ans 1.**

**Introduction**

In the contemporary age of digitalization, the aviation industry, like many others, stands at the intersection of rapid technological evolution and ever-increasing customer expectations. Low-cost airlines, which primarily focus on reducing operational expenses to offer competitive fares, operate under thin profit margins. This makes the efficient use of data and analytics crucial for success. With the deluge of data, ranging from customer preferences to flight operations, airlines have a vast reservoir of information at their disposal. Business analytics procedures can transform this raw data into actionable insights, optimizing various

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**2. Alset is a multi-national top end electric vehicle manufacturer and a market leader in providing autonomous driving features. No other car manufacturer in the world is anywhere near Alset in the autonomous driving space. Being at the forefront comes with its challenges.**

**Alset’s top management heard about its software not being able to differentiate between 2-wheelers, i.e., motorcycles and bicycles. Which caused an erroneous speed estimation of those 2-wheelers and led to some non-fatal accidents. The organization wants to avoid this. For which, it needs a lot of data to train the model. But it’s not storing any data from their cars. Some of the users agreed to share the image/video data from their cars but Alset doesn’t have a data collection or storage or processing methodology in place because all the processing thus far has been on the on-board units (OBUs). To solve this the firm consults and gives you the responsibility to design their pipeline. They don’t have any historical data on any kind of 2-wheelers.**

**How do you approach this problem holistically using both big data and business analytics concepts? Explain the big data component for storage and processing, and analytics component of approaching this use case and what would you do in each of the stages. Goal is to help company collect, store, process data and better predict and classify between different kinds of 2-wheelers. (10 Marks)**

**Ans 2.**

**Introduction**

In the rapidly evolving automotive industry, where autonomous vehicles have gained significant traction, the role of data analytics has become increasingly indispensable. Alset, a pioneering force in electric vehicles and autonomous driving, finds itself at a critical juncture. The recent revelation that their autonomous software struggles to distinguish between motorcycles and bicycles underscores the need for a robust big data infrastructure. The implications are more than just technological; they directly impact user safety, brand reputation, and market leadership. At the heart of this challenge lies the need to collect,

**3. Costco, a high-volume low-cost retailer like D-Mart is planning to start operations in India. Help them and identify 10 locations, which will have high reachability, multi city presence and many more that aid Costco in building a pan India chain in 5-10 years. You are not just helping them identify the top cities but also the localities and the specific area in which they should open.**

**a. Which type of analysis could be used to solve this problem and maximise the outcome for Costco? Explain the data needed to solve this problem. (5 Marks)**

**Ans 3a.**

**Introduction**

Costco's impending entry into India marks a significant shift in the retail landscape of the country. India, with its diverse consumer base and unique regional nuances, demands a strategic and data-driven approach for such a venture. Identifying optimal locations for Costco outlets is crucial to ensure not only immediate profitability but also sustainable growth in the long run. This task necessitates a combination of geospatial, demographic, and

**b. For the purposes of customer relationship management, Costco is planning to collect data of customers and their purchases to provide better services. Which kind of data storage should they prefer? An on-premises data facility or a cloud data facility? Why? (5 Marks)**

**Ans 3b.**

**Introduction**

In the age of digital transformation, effective data storage solutions are pivotal for businesses aiming to foster deeper customer relationships and optimize their operations. For Costco, as it embarks on its journey in India, the choice between on-premises data facilities and cloud data facilities is more than just a technical decision. It's a strategic move, shaping the trajectory of