**Fundamentals of Big Data & Business Analytics**

**December 2021 Examination**

**Question 1. General Electric – a literal powerhouse of a corporation involved in virtually every area of industry, has been laying the foundations of what it grandly calls the Industrial Internet for some time now. But what exactly is it? Here’s a basic overview of the ideas which they are hoping will transform industry, and how it’s all built around big data. A simple way to think of the industrial internet is as a subset of that, which includes all the data-gathering, communicating and analysis done in industry. In essence, the idea is that all the separate machines and tools which make an industry possible will be “smart” – connected, data- enabled and constantly reporting their status to each other in ways as creative as their engineers and data scientists can devise.**

**This will increase efficiency by allowing every aspect of an industrial operation to be monitored and tweaked for optimal performance and reduce down-time – machinery will break down less often if we know exactly the best time to replace a worn part. Data is behind this transformation, specifically the new tools that technology is giving us to record and analyse every aspect of a machine’s operation. And GE is certainly not data poor – according to Wikipedia, its 2005 tax return extended across 24,000 pages when printed out. And pioneering is deeply engrained in its corporate culture – being established by Thomas Edison, as well as being the first private company in the world to own its own computer system, in the 1960s. So of all the industrial giants of the pre-online world, it isn’t surprising that they are blazing a trail into the brave new world of big data. GE generates power at its plants which is used to drive the manufacturing that goes on in its factories, and its financial divisions enable the multi-million transactions involved when they are bought and sold. With fingers in this many pies, it’s clearly in the position to generate, analyse and act on a great deal of data. Sensors embedded in their power turbines, jet engines and hospital scanners will collect the data – it’s estimated that one typical gas turbine will generate 500Gb of data every day. And if that data can be used to improve efficiency by just 1% across five of their key sectors that they sell to, those sectors stand to make combined savings of $300 billion. With those kinds of savings within sight, it isn’t surprising that GE is investing heavily. In 2012 they announced $1 billion was being invested over four years in their state-of-the-art analytics centre in San Ramon, California, to attract pioneering data talent to lay the software foundations of the Industrial Internet.**

**a) State and explain how this generated data is leveraged to enable growth in manufacturing sector for GE. Provide example of 2 business questions using the data and potential analytics approach.**

**b) What is the end-to-end big data architecture required in this context? Show it preferably using a diagram/ flowchart. You can explain possible tools which can be leveraged in the**

**life cycle and the rationale for the tool. (10 Marks )**

**Ans 1.**

**Introduction:**

The company has ten industrial and production facilities in India, and they are all owned and operated by GE. It is obvious that the people of this nation are aware of both the country's capacity, as well as its challenging circumstances. By making use of industrial information across a broad spectrum of Indian industries, GE has been providing high-quality services at great cost-effectiveness that operate within industry norms and outperform customers' expectations, thereby exceeding customer expectations as a whole. For our customers we offer

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# Question 2. Explain how clouds have increasingly transformed the adoption of big data in the companies. You must mention 3 examples of business cases which could transform their business. What choices one needs to make to improve cost optimization while using the cloud-based platform. (10 Marks)

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## Ans 2.

## Introduction:

A major advantage to the companies benefiting from technologies that have improved over the years is that they can experience simpler operation methods and more cost-effective operations. Even though data from every possible supply available to companies of a wide variety has now become readily available to them - social media, sensors, business apps, and many more sources. The availability of data from each source has proven to be a key differentiator for corporations of

# Question 3. Indian Banking Industry is facing fraud related issues for the past few years. Indian Banks, especially Public Sector banks are suffering from mounting losses and rise in NPAs on account of increased level of number of frauds. Loan sanctioning for new projects, as happened in recent case of Nirav Modi, have brought sufferings for the industry. Many of the top executives have been charged for alleged corruption and deceitful intentions in granting loans. This creates a question mark on corporate governance and ethics in the industry. In fact, the menace of rising NPA is a global crisis that is responsible for slowdown in industry. The strength of financial system of any economy can be judged by its level of production and consumption. The living standard and status of people can be judged with soundness of financial system; but if financial system is packed with frauds and high degree of NPAs, it should be a cause of worry for any nation.

# Loan loss- The risk of increasing NPA and Bad debts in India is increased manifold, due to lack of appropriate methods of monitoring of loans and not by proper due diligence.

# a. State what approach can help achieve controlling bad debts and NPAs due to loan loss? How can each BI and BA help solve this problem? (5 Marks)

# b. How can predictive analytics be enabled in this case? Illustrate the solution detail. (5 Marks)

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## Ans 3.

## Introduction

In spite of the fact that it is a fact that the rise in bond prices has had a devastating effect on the major banks during the current fiscal year, the problem that really puts the cornerstone on the story is the growing number of problematic loans. In spite of this, banks will have to carry on to endure in the long run due to the new RBI regulations, which was made to encourage lenders to

**Ans 3(b).**

In the debate regarding the bank capital law, one aspect that has been devoted to significant discussion has been the potential role that provisions for losses on bank mortgages may play as a component of a comprehensive capitalization regulatory issue. The Basel Committee on Banking