Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA (PART TIME)– SEMESTER 2– EXAMINATION – WINTER 2018

Subject Code: 3529904 Date:27/12/2018

Subject Name: Business Analytics (BA)

Time:02.30 PM to 05.30 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 Explain Terms. **14**

(a) Define Predictive Analytics.
(b) What is Data Lake?
(c) Define Business Intelligence.
(d) Name different OLAP architectures.
(e) List different sources of Unstructured Data.
(f) List the operations which can be performed on a MOLAP cube.
(g) What is a Dashboard?

Q.2 **(a)** Explain difference between Business Analytics (BA) and Business Intelligence (BI). **07**

(b) How IT in business helps in **07**

a) Improving office productivity and office automation.
b) Improved marketing & customer support.

OR

(b) What are the requirements and common expectations of information users in a business? **07**

Q.3 **(a)** What are the advantages of structured data? **07**

(b) What is web analytics? What are the uses of web analytics in business? **07**

OR

Q.3 **(a)** What is machine learning? Explain different types of machine learning. **07**

(b) Give real life applications where you would use data mining. **07**

Q.4 **CASE STUDY:**

Health care industry is one of the world's fastest-growing industries; consuming over 10 percent of gross domestic product (GDP) of most developed nations. The World Health Organization estimates there are 9.2 million physicians, 19.4 million nurses and midwives, 1.9 million dentists and other dentistry personnel, 2.6 million pharmacists and other pharmaceutical personnel, and over 1.3 million community health workers worldwide, making the health care industry one of the largest segments of the workforce. Obviously, such an industry also creates voluminous data in respect of patients, diseases, diagnosis, medicines, research, etc.

Indian healthcare industry is engaged in generating zettabytes (1021 gigabytes) of data every day by capturing patient care records, prescriptions, diagnostic tests, insurance claims, equipment generated

data like ECG, X-rays, MRI Scan, Mammography, Sonography, Computer Assisted Tomography, etc., for monitoring vital signs and most importantly the medical research.

Using data analytics provides the means to find answers to the issues facing the health care industry. Following are some of the services that form the underlying layer of analytics in the Healthcare Industry:

Clinical Data Management (CDM) Services – that addresses the need for records of patient that includes demographics, patient medical history, allergies, laboratory test results, treatment responses, mapping of symptoms and drugs etc. Analytics in this area can support fact based decisions in areas of reduction of medical errors, manage diseases, understand physician's performance and retain patients.

Compliance Analytics – that addresses the customers' need to adhere to national and sub national healthcare regulations and similar laws worldwide. Improvement in use of wide spread digital data will support audits, competitive returns bench-marking and spend fraud pattern detection capability.

Social Media Intelligence/Analytics – that helps identify deep business insights on patients sentiments, their requirements, treatment effectiveness, peer physician preferences, key opinion leader's recommendations, disease spread and concentration etc. using data and opinion from social media.

Financial Analytics – will lead to enhance ROI, improved utilization of hospital infrastructure and human resources, optimize capital management, optimize supply chain and reduce frauds.

Service Analytics for Medical Devices – that ensures monitoring and tracking of all after sales and service related processes, offers insights into supplies management and ensures proactive as well as preventive maintenance. The solution is aimed at the effective management of the services business of medical devices.

Predictive Models – can help to get to know the patients better by processing historical data of patients to find root cause analysis and trends so that the patients can be delivered quality, cost effective lifesaving services.

Clinical Analytics – like detecting post-operative complications, predicting 30 day risk of readmission, detecting potential delays in diagnosis, predicting out of intensive care unit death, etc.

Based on the above information answer the following:

Q.4	(a)	Give example of descriptive and predictive analytics which can be used by healthcare sector.	**07**
	(b)	List different types of data that a hospital collects and processes by categorizing them into structured, semi structured and unstructured.	**07**

OR

Q.4	(a)	How a hospital can use prescriptive analytics to optimize various processes in a hospital.	**07**
	(b)	Justify that hospital generates big data in terms of Volume, Variety, Velocity, Veracity and Value.	**07**

Q.5 **CASE STUDY:**

An Indian multinational company has a presence in 5 countries, namely India, Bangladesh, UK, Australia and New Zealand. It has a global customer base of 3 million customers. It has four product lines, namely, Apparels, Fashion Accessories, Cosmetics & Beauty Products, and Health Foods & Supplements. The headquarters is located at Mumbai, India. With growing businesses all over the world, the country manager is responsible for country wide sales and has to report month wise or quarter wise sales to the head office at India. Also the offices all over the world has to process customer documentations, e-mails from all business associates, summary statements of sales across different regions, generate MIS for top management, arranging for business presentations for clients, facilitate online video conferences with business associates and so on. With growing business and multi locational presence the company processes huge volume of various types of data daily.

Give suitable answers in relation to the above case.

(a) Which kind of IT infrastructure do you suggest to the company for **07**
(i) Transaction Processing
(ii) Improving Office Productivity
(iii) MIS reporting

(b) How can the company benefit from data mining and machine learning? **07**

OR

(a) Give some example of how you can use a multi-dimensional OLAP. **07**
Show some hypothetical OLAP cubes by stating some dimensions and measures.

(b) Show how you can do slicing, dicing, rollup and roll down operation **07**
on any cube you have shown in the example.

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