Printed Page:- 04 **Subject Code:- GPG035**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

MCA INSTITUTE

(An Autonomous Institute Affiliated to AKTU, Lucknow)

Global PGDM

TRIMESTER: III - THEORY EXAMINATION (2023 - 2024)

Subject: Introduction to Business Analytics

Time: 2.5 Hours **Max. Marks: 60**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **15**

1. Attempt all parts:-

1-a. Identify which of them is not a component of business analytics.(CO1) 1

(a) Descriptive Analytics

(b) Predictive Analytics

(c) Prescriptive Analytics

(d) Retrospective Analytics

1-b. Maximum number of rows in an Excel worksheet in the latest versions of Excel.(CO2) 1

(a) 65536

(b) 1048576

(c) 456

(d) 12345

1-c. Measure of variance is the difference between the largest and smallest values in a dataset.(CO3) 1

(a) Range

(b) Standard Deviation

(c) Both A and B

(d) None of these

1-d. A negative correlation coefficient indicate.(CO4) 1

(a) There is no relationship between the variables.

(b) As one variable increases, the other variable decreases.

(c) Both variables increase together.

(d) None of these

1-e. Stationarity in time series analysis means.(CO5) 1

(a) The tendency for a time series to remain the same over time

(b) The statistical property of having constant mean and variance over time

(c) The process of converting non-stationary data into stationary data

(d) None of these

2. Attempt all parts:-

2.a. Explain the difference between descriptive and predictive analytics.(CO1) 2

2.b. Describe the main features of a doughnut chart in Excel.(CO2) 2

2.c. Define median and explain its significance in data analysis.(CO3) 2

2.d. Describe how correlation coefficient interpreted.(CO4) 2

2.e. Define how time series analysis used in forecasting.(CO5) 2

SECTION B **15**

3. Answer any <u>three</u> of the following:-

3-a. Explain the concept of data-driven decision-making and discuss how business analytics enables organizations to leverage data for making informed and strategic decisions.(CO1) 5

3-b. Discuss the characteristics of a histogram chart in MS Excel and explain when it is preferable to use a histogram over other chart types. Provide examples of situations where histograms are effective in analyzing and presenting data distributions.(CO2) 5

3.c. Discuss the concept of variance as a measure of data dispersion. Explain how variance is calculated and its importance in understanding the spread of data values. Compare and contrast variance with other measures of dispersion, such as standard deviation and range.(CO3) 5

3.d. Describe the steps involved in calculating the correlation coefficient between two variables. Provide a detailed example to illustrate the calculation 5

process.(CO4)

3.e. Discuss the process of evaluating and validating time series forecasting models. What performance metrics are commonly used to assess the accuracy and reliability of forecasting models.(CO5) 5

SECTION C **30**

4. Answer any <u>one</u> of the following:-

4-a. A restaurant chain wants to improve menu offerings to cater to customer preferences. How can business analytics be leveraged to analyze sales data and identify popular menu items? Question: Using business analytics, propose a menu optimization strategy for the restaurant chain to analyze sales data and identify popular menu items to enhance customer satisfaction.(CO1) 6

4-b. An e-learning platform wants to personalize learning experiences for students. How can business analytics be employed to analyze student performance data and tailor educational content? Question: Develop a personalized learning strategy for the e-learning platform using business analytics to analyze student performance data and tailor educational content to individual needs.(CO1) 6

5. Answer any <u>one</u> of the following:-

5-a. A sales manager wants to analyze the performance of different sales representatives over the past year. Which Excel chart type would you recommend for visualizing this data, and how would you interpret the insights gained from the chart? Question: Using MS Excel, create a suitable chart type to compare the performance of different sales representatives over the past year. Interpret the insights gained from the chart and provide recommendations for improving sales performance.(CO2) 6

5-b. A manufacturing company wants to analyze production output across different manufacturing plants to identify efficiency improvements and cost-saving opportunities. How can MS Excel be used to create a waterfall chart to visualize production output and costs?

Question: Utilizing MS Excel, create a waterfall chart to visualize production output and costs across different manufacturing plants. Interpret the insights gained from the waterfall chart and recommend initiatives for improving efficiency and reducing costs based on the findings.(CO2) 6

6. Answer any <u>one</u> of the following:-

6-a. A group of friends went to a restaurant and recorded the prices (in dollars) of the items they ordered. The prices are as follows: 15, 20, 25, 30, 35. Calculate the mean, median, and mode of the prices.(CO3) 6

6-b.	A school administrator wants to analyze the test scores of students in a class. The scores (out of 100) are as follows: 75, 80, 85, 90, 95. Calculate the mean, median, and mode of the test scores.(CO3)	6

7. Answer any <u>one</u> of the following:-

7-a.	A hospital wants to determine if there is a correlation between the length of stay for patients and their recovery outcomes. How would you analyze this relationship using correlation and regression techniques, and what recommendations could be made based on the findings.(CO4)	6
7-b.	A sports team is interested in understanding the relationship between players' training hours and their performance on the field. How could regression analysis be used to predict players' performance based on their training hours, and what insights could be gained from the analysis.(CO4)	6

8. Answer any <u>one</u> of the following:-

8-a.	A city planner wants to forecast population growth to plan infrastructure development and urbanization initiatives. How can time series analysis techniques such as demographic modeling and population projection methods help predict future population trends.(CO5)	6
8-b.	Discuss how public health agencies use time series analysis to predict disease outbreaks and epidemics based on historical disease data, environmental factors, and population demographics.(CO5)	6