Printed Page:-04 **Subject Code:- NPGDM035**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

MCA INSTITUTE

(An Autonomous Institute Affiliated to AKTU, Lucknow)

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. Primary goal of business analytics.(CO1) 1

(a) To increase operational costs

(b) To reduce decision making

(c) to improve business performance and gain insight

(d) TO complicate data inrtepretation

1-b. Identify the function COUNTIF() do in Excel.(CO2) 1

(a) Counts the number of cells that contain numbers

(b) Counts the number of cells that are not empty

(c) Counts the number of cells that meet a specific condition

(d) Counts the number of cells that contain text

1-c. If a dataset has multiple modes, how many modes does it have.(CO3) 1

(a) one

(b) Two

(c) Three or more

(d) it depends upon dataset

1-d. Correlation coefficient of -0.8 indicate.(CO4) 1

(a) Strong Positive relation

(b) Strong Negative relation

(c) Week Positive Correlation

(d) Week Negative Correlation

1-e. Autocorrelation in time series analysis is.(CO5) 1

(a) The correlation between two different time series

(b) The correlation between a time series and its lagged values

(c) The correlation between time series data and spatial data

(d) None of these

2. Attempt all parts:-

2.a. Explain key components of business analytics (CO1) 2

2.b. Explain the use of Conditional Formatting (CO2) 2

2.c. Describe mean and also discuss methods to calculate (CO3) 2

2.d. Describe the purpose of regression analysis (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. Describe the main features of a pie chart in MS Excel, including its components and the type of data it is best suited for displaying. Discuss the advantages and limitations of using pie charts in data visualization.(CO2) 5

3.c. Describe the concept of the mean as a measure of location. Explain how it is calculated and discuss its significance in data analysis. Provide examples of scenarios where the mean is a useful measure of central tendency and situations where it may be misleading.(CO3) 5

3.d. Explain the concept of correlation in detail. Discuss the different types of correlation coefficients and their interpretation.(CO4) 5

3.e. Describe the components of a time series and their characteristics. Explain how 5

each component contributes to the overall behavior of the time series.(CO5)

SECTION C **30**

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

4-a. An e-commerce platform wants to improve its recommendation engine to increase customer engagement and sales. How can business analytics be leveraged to analyze customer data and personalize product recommendations? Question: Develop a strategy for the e-commerce platform to enhance its recommendation engine using business analytics to increase customer engagement and drive sales.(CO1) 6

4-b. A transportation company wants to optimize its route planning to reduce fuel costs and improve delivery efficiency. How can business analytics be used to analyze route data and optimize transportation logistics? Question: Develop a plan for the transportation company to optimize its route planning using business analytics to reduce fuel costs and improve delivery efficiency.(CO1) 6

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

5-a. A human resources manager wants to analyze employee turnover rates across different departments within the organization. How can MS Excel be used to create a stacked column chart to visualize employee turnover rates by department?
Question: Using MS Excel, create a stacked column chart to visualize employee turnover rates across different departments within the organization. Interpret the insights gained from the chart and discuss potential factors contributing to high turnover rates in certain departments.(CO2) 6

5-b. A healthcare provider wants to analyze patient satisfaction scores collected from surveys to identify areas for improvement in service quality. How can MS Excel be used to create a bar chart to visualize patient satisfaction scores by department? Question: Utilizing MS Excel, create a bar chart to visualize patient satisfaction scores by department. Interpret the insights gained from the bar chart and discuss potential initiatives for improving service quality in departments with lower satisfaction scores.(CO2) 6

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

6-a. A researcher collected data on the ages of participants in a study. The ages of 20 participants are as follows: 25, 28, 30, 35, 40, 42, 45, 50, 55, 58, 60, 65, 70, 75, 80, 85, 90, 95, 100, and 105. Calculate the mean, median, and mode of the ages.(CO3) 6

6-b. A company collected data on the time taken (in minutes) by employees to 6

complete a task. The time taken by 15 employees is as follows: 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90. Calculate the mean, median, and mode of the time taken.(CO3)

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

7-a. A real estate agent wants to predict housing prices based on various property attributes such as size, location, and amenities. How could regression analysis be used to develop a pricing model, and what factors should be considered in building the model.(CO4) 6

7-b. Calculate the correlation coefficient between two variables R and S using the following data: R: [8, 12, 14, 20, 25] S: [4, 8, 15, 16, 20].(CO4) 6

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

8-a. Discuss how do e-commerce platforms like Amazon use data mining algorithms to generate personalized product recommendations for users based on their browsing and purchase history.(CO5) 6

8-b. Discuss how website owners use time series analysis to forecast visitor traffic and optimize server capacity and website performance.(CO5) 6