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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA (Integrated)

SEM: V - THEORY EXAMINATION (2024- 2025)

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, &amp; C. It consists of Multiple Choice Questions (MCQ's) &amp; 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. Select the one which is true about primary data?(CO1,K1) 1
- (a) It is collected from existing databases
  - (b) It is gathered from secondary sources
  - (c) It is collected directly from the place of origin
  - (d) It is not suitable for business analytics
- 1-b. In Excel, we utilize Conditional Formatting to? (CO2,K1) 1
- (a) To create a new spreadsheet
  - (b) To emphasize data
  - (c) To write a letter
  - (d) To draw shapes
- 1-c. In a dataset of ages: 18, 21, 21, 22, 25, 25, 25, what is the mode? (CO3,K1) 1
- (a) 18
  - (b) 21
  - (c) 22
  - (d) 25
- 1-d. Select the one which is NOT a limitation of simple linear regression? (CO4,K1) 1
- (a) Assumption of linearity
  - (b) Sensitivity to outliers
  - (c) Ability to handle multiple independent variables

- (d) Assumption of independence of errors
- 1-e. There is difference between Cyclical and seasonality in time series data because ? (CO5,K1) 1
- (a) Cyclical has a fixed period
- (b) Cyclical does not have a fixed period
- (c) Cyclical is always linear
- (d) Cyclical is always multiplicative
2. Attempt all parts:-
- 2.a. State the examples of qualitative data and quantitative data. (CO1,K2) 2
- 2.b. Describe the uses of the 'Freeze Panes' feature in MS Excel. (CO2,K2) 2
- 2.c. Define variance. Give its significance in analytics. (CO3,K2) 2
- 2.d. If the y-intercept ( $\beta_0$ ) in a regression equation is zero, what does this imply about the relationship between X and Y? Provide an example scenario with graph if applicable. (CO4,K3) 2
- 2.e. Discuss the concept of Auto correlation and Auto regression. (CO5,K3) 2

## **SECTION-B**

15

3. Answer any three of the following:-

- 3-a. Elaborate on the types of data based on the scale of measurement with the help of relevant examples. (CO1,K2) 5
- 3-b. Discuss the use of advanced functions such as VLOOKUP, HLOOKUP, INDEX, and MATCH in Excel. Include examples demonstrating how to use these functions to search and retrieve data.(CO2,K4) 5
- 3.c. A bank manager is analyzing customer wait times in a branch to improve service. The data collected represents the number of customers waiting for various time intervals. Class Intervals: 0-140, 140-145, 145-150, 150-155, 155-160, 160-165 (time in seconds)  
Frequency: 4, 7, 18, 11, 6, 5 (number of customers)  
The manager wants to calculate the median wait time to understand the average customer's experience. (CO3,K3) 5
- 3.d. For the following data set: X: 1, 2, 3, 4, 5, 6, 7, 8 AND Y: 2, 4, 5, 4, 5, 7, 8, 9. 1.Derive the linear regression equation for the given data. 2. Find the predicted value of Y when X=6.5. (CO4,K3) 5
- 3.e. Provide a detailed example of a business scenario where time series forecasting is crucial. Explain the steps and methods used in the forecasting process. (CO5,K3) 5

## **SECTION-C**

30

4. Answer any one of the following:-

- 4-a. Describe various data types used in analytics. Differentiate between structured and unstructured data with examples. (CO1,K3) 6
- 4-b. "Steps in the business analytics process are sequential." Comment. (CO1,K2) 6

5. Answer any one of the following:-

- 5-a. Highlight the steps to insert chart in MS Excel. Also explain the chart elements. (CO2,K2) 6
- 5-b. Describe the steps which are followed to create a dash board in Excel. Discuss uses of dash boards. (CO2,K3) 6
6. Answer any one of the following:-
- 6-a. The following data provides the mean and standard deviation of the test scores in two subjects, Mathematics and Physics: Mathematics: Mean  $\mu_x=80$  , Standard Deviation  $\sigma_x=10$ , Physics: Mean  $\mu_y=75$ , Standard Deviation  $\sigma_y=8$ . Calculate the Coefficient of Variation (CV) for both subjects and compare the variability between the two subjects. (CO3,K4) 6
- 6-b. The following are the scores of 5 students in a Math test: 6
- | Student | Score (X) |
|---------|-----------|
| 1       | 10        |
| 2       | 12        |
| 3       | 15        |
| 4       | 14        |
| 5       | 18        |
- Find the standard deviation of the scores.  
(CO3,K4)
7. Answer any one of the following:-
- 7-a. Discuss how businesses use regression analysis for risk assessment and optimization of resources. Provide an example related to cost-benefit analysis. (CO4,K3) 6
- 7-b. A business analyst uses simple linear regression to estimate profits based solely on product price. However, the analysis fails to account for variables like competitor pricing, marketing spend, and customer satisfaction scores. Evaluate the limitations of using simple linear regression in this case. Suggest how a multiple regression model would improve accuracy and describe how you would validate the model's effectiveness. (CO4, K5) 6
8. Answer any one of the following:-
- 8-a. Explain the ARIMA model and its components: AR, I, and MA. (CO5,K2) 6
- 8-b. A popular e-commerce platform, TrendBuy, has been experiencing fluctuations in its sales volume, especially during festive seasons and sales events. The company struggles with forecasting the demand for specific products, leading to issues with fulfilling customer orders on time. How can TrendBuy utilize time series analysis to improve their demand forecasting and optimize inventory management? (CO5,K5) 6