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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, & 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. The analytical approach in business analytics primarily rely on? CO1,K1 1
- (a) Intuition and experience
- (b) Random sampling
- (c) Data-driven analysis
- (d) Guesswork
- 1-b. The function in Excel that counts cells with integers that fall within a given range? CO2,K1 1
- (a) SUM()
- (b) AVERAGE()
- (c) COUNT()
- (d) MIN()
- 1-c. The range of the dataset 50, 44, 59, 67, 54, 96, 84 is: CO3,K1 1
- (a) 39
- (b) 79
- (c) 52
- (d) 53
- 1-d.  $\epsilon$  epsilon which is used in the regression equation  $Y = \beta_0 + \beta_1 X + \epsilon$ , represents ? CO4,K1 1
- (a) The slope of the regression line

- (b) The y-intercept
  - (c) The error term
  - (d) The dependent variable
- 1-e. The time series component which is characterized by peak and troughs at non-periodic fluctuations? CO5,K1 1
- (a) Trend
  - (b) Seasonality
  - (c) Cyclicity
  - (d) Irregularity

2. Attempt all parts:-

- 2.a. Define Descriptive analytics. Give one difference between Descriptive and Predictive analytics. CO1,K1 2
- 2.b. Define conditional formatting in MS Excel. CO2,K2 2
- 2.c. State the significance of the coefficient of variation (CV). CO3,K2 2
- 2.d. Define dependent variable and independent variable in regression. CO4,K2 2
- 2.e. Define cyclicity with respect to time series analysis. CO5,K2 2

**SECTION-B** 15

3. Answer any three of the following:-

- 3-a. Explain the significance of Data-driven decision making. Outline the benefits of data driven decision making. CO1,K2 5
- 3-b. Illustrate how to create and apply conditional formatting to highlight key data trends in a dataset. Provide examples of different types of conditional formatting rules. CO2,K3 5
- 3.c. The following table shows the marks obtained by 10 students in two subjects: Mathematics (X) and Science (Y). calculate correlation coefficient using given data: 5

Student	Mathematics (X)	Science (Y)
1	50	55
2	60	65
3	55	60
4	65	70
5	70	75
6	80	85
7	75	80
8	85	90
9	90	95
10	95	100

CO3,K3

- 3.d. Discuss the term confidence interval, and elaborate how does it help estimate the true value of a population parameter. CO4,K3 5

- 3.e. Explain the ARIMA model and its components: Autoregressive (AR), Integrated (I), and Moving Average (MA). CO5,K3 5

**SECTION-C** 30

4. Answer any one of the following:-

- 4-a. Elaborate the scope of business analytics with reference to product delivery companies such as Amazon etc. Support your answer with examples. CO1,K3 6
- 4-b. Discuss the benefits of adoption of business analytics in organizations, and briefly explain the key factors that encourage them to implement it. CO1,K3 6

5. Answer any one of the following:-

- 5-a. Elaborate the chart types used for data visualization in MS Excel. CO2,K3 6
- 5-b. Explain the use of the VLOOKUP function in Excel. Provide a sample scenario demonstrating its application. CO2,K3 6

6. Answer any one of the following:-

- 6-a. Using the Step Deviation Method, find the mean of the data set of the following class intervals and frequencies is given: CO3,K3 6

Class Interval	Frequency (fi)
10 - 20	5
20 - 30	8
30 - 40	12
40 - 50	15
50 - 60	10

- 6-b. 6

The following table provides the class intervals and their frequencies, calculate the mode of this dataset: CO3,K3

Class Interval	Frequency (fi)
0 - 10	5
10 - 20	8
20 - 30	12
30 - 40	15
40 - 50	10
50 - 60	4

7. Answer any one of the following:-

- 7-a. Analyze a situation where a retail company is trying to forecast its sales. They initially use simple linear regression with advertising spend as the predictor variable. However, they realize other factors like store size, product variety, and customer footfall might also influence sales. Explain why multiple regression would be a better approach in this scenario. Provide reasoning and identify the steps involved in building the multiple regression model. CO4,K5 6
- 7-b. In a business decision-making process, why is it essential to identify and select the right independent variable to predict the dependent variable? Can you provide a scenario where the wrong choice of independent variable could lead to inaccurate 6

predictions? CO4,K3

8. Answer any one of the following:-

- 8-a. 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
- 8-b. Explain the concept of Random effects in time series data. Discuss impact of random effects on time series data. How can random effects be incorporated into forecasting models? CO5,K3 6

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