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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

BBA

SEM: IV - THEORY EXAMINATION (2025 - 2026)

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:-

- (1.1) The analytical approach in business analytics primarily rely on?(CO1, K1) 1
- Intuition and experience
 - Random sampling
 - Data-driven analysis
 - Guesswork
- (1.2) An Excel dashboard is primarily used to:(CO2, K1) 1
- Display large amounts of data
 - Write detailed reports
 - Visualize key metrics and KPIs
 - Edit data
- (1.3) The median is the middle value in a dataset when the values are arranged in _____ order. (CO3, K1) 1
- Descending
 - Ascending
 - Random
 - None of these
- (1.4) The effect of multicollinearity in regression analysis is shown as?(CO4, K1) 1
- Increased precision of coefficient estimates
 - Inflated standard errors of coefficients
 - Decreased variance of errors
 - Improved model accuracy

- (1.5) The role of the Integrated (I) component in the ARIMA model refers to?(CO5, K1) 1
- (a) To capture seasonal variations
 - (b) To handle non-stationarity by differencing
 - (c) To model the relationship between the current and past values
 - (d) To smooth random noise

2. Attempt all parts:-

- (2.1) Highlight the applications of data analytics in business. (CO1, K1) 2
- (2.2) Differentiate between a row and a column.(CO2, K1)(CO2, K1) 2
- (2.3) Explain the measures for calculating the measure of dispersion. (CO3, K1) 2
- (2.4) In regression technique, which type of data is the target variable?(CO4, K1) 2
- (2.5) State the applications of time series forecasting.(CO5)(CO5, K1) 2

SECTION-B

15

3. Answer any three of the following:-

- (3.1) A retail chain is experiencing a decline in sales. How can business analytics assist in identifying the root causes?(CO1, K2) 5
- (3.2) Explain how to create a basic pivot table and summarize data from a sales report. Include steps to add fields, filter data, and format the pivot table.(CO2, K3) 5
- (3.3) Explain the concept of skewness and its effect on the measures of central tendency.(CO3, K2) 5
- (3.4) Define regression analysis. Explain its importance in business decision-making.(CO4, K2) 5
- (3.5) Discuss the Autoregressive (AR) model in time series forecasting. How does it predict future values?(CO5, K2) 5

SECTION-C

30

4. Answer any one of the following:-

- (4.1) A bank has observed a rise in credit card fraud. They want to detect and prevent future fraudulent transactions. Propose a predictive analytics approach and list the data variables that might be critical.(CO1, K3) 6
- (4.2) A clothing retailer wants to send targeted offers to customers based on seasonality and previous buying patterns. Design a predictive analytics model they could use, and explain how it supports marketing decisions.(CO1, K4) 6

5. Answer any one of the following:-

- (5.1) Two firms report these sales figures (₹000): 6
 Firm X: 100, 102, 98, 99, 101
 Firm Y: 90, 110, 95, 105, 100
 Compute all measures of variability and suggest which firm has more stable performance.(CO2, K4)
- (5.2) A manufacturing plant records time to complete a process (in minutes): 6
 12, 13, 11, 15, 14, 13, 10, 13, 12, 16
 Compute all relevant measures of location and variability and suggest actions if the company wants to reduce variability.(CO2, K4)

6. Answer any one of the following:-

- (6.1) Explain why the mean is sensitive to outliers in a dataset and discuss how this sensitivity can affect the interpretation of statistical results. Provide a real-life example to support your explanation.(CO3, K2) 6
- (6.2) Discuss the calculation method for finding the mean, median, and mode in a dataset. Compare and contrast these measures, highlighting their strengths and limitations.(CO3, K2) 6
7. Answer any one of the following:-
- (7.1) You are a business analyst at a retail firm tasked with creating customer segments for targeted promotions. 6
1. Describe the complete process of applying unsupervised learning (clustering) to segment customers.
 2. What business decisions can be driven from these segments?(CO4, K4)
- (7.2) An e-commerce firm wants to recommend products to users based on past purchase patterns. 6
1. Identify if this is supervised or unsupervised learning.
 2. Which data mining technique(s) can be used to generate recommendations, and how?(CO4, K3)
8. Answer any one of the following:-
- (8.1) You are a business analyst at an e-commerce firm. How would you use time series forecasting to plan marketing and inventory for Black Friday sales?(CO5, K3) 6
- (8.2) Explain how ARIMA modeling can be applied to forecast hospital bed occupancy in a public healthcare system.(CO5, K2) 6