

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

MBA

SEM: III - THEORY EXAMINATION (2025 - 2026)

Subject: Predictive Analytics

Time: 3 Hours

Max. Marks: 100

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

20

1. Attempt all parts:-

- 1-a. One major benefit of predictive analytics is related to which area? (CO1,K1) 1
- (a) Reduced visualization needs
 - (b) Higher manual workload
 - (c) Removing all risks
 - (d) Improved customer experience
- 1-b. The step of defining business problems in predictive modeling belongs to which phase? (CO1,K1) 1
- (a) Business understanding
 - (b) Data preparation
 - (c) Modeling
 - (d) Evaluation
- 1-c. Qualitative data is known as descriptive (CO2,K1) 1
- (a) Counts
 - (b) Numbers
 - (c) Decimals
 - (d) Text or Labels
- 1-d. Quantitative data is known for (CO2,K1) 1
- (a) Numbers
 - (b) Images
 - (c) Text
 - (d) Symbols

- 1-e. Real-time data integration (CO3,K1) 1
- (a) Yearly updates
 - (b) Only batch processing
 - (c) Slow updates
 - (d) Continuous data processing
- 1-f. Data reduction focuses (CO3,K1) 1
- (a) Making data larger
 - (b) Removing cleaned records
 - (c) Keeping all variables
 - (d) Selecting important features only
- 1-g. The validation set assists model tuning by (CO4,K1) 1
- (a) helping adjust hyperparameters
 - (b) storing final predictions
 - (c) replacing the test set
 - (d) reducing dataset size
- 1-h. A model is considered generalized when validation accuracy (CO4,K1) 1
- (a) becomes lowest
 - (b) equals zero
 - (c) becomes random
 - (d) exceeds training accuracy
- 1-i. Component representing long-term upward or downward movement in (CO5,K1) 1
- (a) Trend
 - (b) Seasonality
 - (c) Cyclic
 - (d) Irregular
- 1-j. Repetitive patterns occurring over fixed period like monthly (CO5,K1) 1
- (a) Seasonality
 - (b) Trend
 - (c) Cyclic
 - (d) Irregular

2. Attempt all parts:-

- 2.a. Explain the purpose of data preprocessing in analytics workflows. (CO1,K2) 2
- 2.b. Describe ordinal data in simple terms. (CO2,K2) 2
- 2.c. Describe the role of data integration in the preprocessing workflow. (CO3,K2) 2
- 2.d. Explain the role of the training set in model development. (CO4,K2) 2
- 2.e. Identify key objectives of time series analysis in business forecasting. (CO5,K2) 2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

- 3.a.(i) Discuss how predictive analytics enhances operational efficiency in organizations. 6

(CO1,K3)

- 3.a.(ii) Evaluate the effectiveness of dashboards in strategic business monitoring. (CO1,K4) 6
- 3.b. Answer any one of the following:-
- 3.b.(i) Compare qualitative and quantitative data with two differences. (CO2,K3) 6
- 3.b.(ii) Summarize the features of Pandas DataFrames in data handling. (CO2,K3) 6
- 3.c. Answer any one of the following:-
- 3.c.(i) Discuss the usefulness of data virtualization in preprocessing. (CO3,K3) 6
- 3.c.(ii) Explain how conditional probability tables influence Bayesian predictions. (CO3,K3) 6
- 3.d. Answer any one of the following:-
- 3.d.(i) Evaluate the importance of choosing appropriate partition ratios for different machine learning tasks. (CO4,K4) 6
- 3.d.(ii) Illustrate cases where improper data splitting leads to biased or misleading model performance. (CO4,K4) 6
- 3.e. Answer any one of the following:-
- 3.e.(i) Examine how seasonal patterns influence forecasting accuracy across industries. (CO5,K4) 6
- 3.e.(ii) Assess the importance of identifying trend direction when planning long-term strategies. (CO5,K4) 6

SECTION-C

50

4. Answer any one of the following:-
- 4-a. A clinic wants to understand the common reasons patients miss appointments. Prepare a data analysis method and discuss how the results can guide better scheduling. (CO1,K3) 10
- 4-b. A new online shop wants to study customer buying behavior. Build a basic predictive analytics flow and explain how each step helps the business. (CO1,K4) 10
5. Answer any one of the following:-
- 5-a. A retail shop tracks number of customers, sales amount and time spent by customers. Examine which variables are discrete and which are continuous with justification. (CO2,K3) 10
- 5-b. An e-commerce firm stores product colors, sizes (S/M/L), and prices. Analyse each variable type and explain its importance in modeling. (CO2,K4) 10
6. Answer any one of the following:-
- 6-a. A logistics firm depends on live vehicle tracking. Explain how real-time integration supports its operations. (CO3,K3) 10
- 6-b. An e-commerce platform receives inconsistent product details from different vendors. Recommend appropriate transformation techniques to standardize the data. (CO3,K4) 10
7. Answer any one of the following:-
- 7-a. A startup trained a model using only a training set and directly evaluated it on new customer data. The results appear overly optimistic. Recommend a complete partitioning plan and explain the role of each subset. (CO4,K3) 10

- 7-b. A dataset contains inconsistent values and different date ranges. The team plans to apply custom 70:10:20 splitting before modeling. Propose a step-by-step approach to execute this custom split and explain why consistency is important. (CO4,K4) 10
8. Answer any one of the following:-
- 8-a. A hospital monitors daily patient admissions with visible weekly patterns. Construct a Holt-Winters forecasting approach and justify the seasonal parameters needed. (CO5,K4) 10
- 8-b. A bank wants to forecast currency exchange rates but the data shows long cycles with no fixed length. Recommend an appropriate modeling technique and justify its suitability. (CO5,K4) 10

REG_JULY_DEC_2025