iii. The actual and forecasted demands of an item are as shown below: **5**

Month	Actual Demand	Forecasted Demand
April	225	200
May	220	240
June	285	300
July	290	270
August	250	230

Evaluate the forecast error measured in terms of Mean Absolute Percent Error (MAPE).

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Management Studies
End Sem Examination May-2024
MS5CO37 Forecasting Technique for Analytics

Programme: MBA Branch/Specialisation: Management

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Which of the following is not a step of decision process? **1**
(a) Specify objectives
(b) Analyze and select alternative
(c) Determine the product of chance probabilities
(d) Implement and monitor the result

ii. Which forecasting would be easy to predict based on time horizon? **1**
(a) Medium range
(b) Short range
(c) Long range
(d) Intermediate range

iii. Which of the following is a drawback of filling in a global constant for the missing value? **1**
(a) It increases the data size
(b) It decreases the number of missing values
(c) It may project wrong trend in data
(d) It is difficult to update the data

iv. Which of the following is true about the arithmetic mean? **1**
(a) It is sensitive to outliers
(b) It is not sensitive to outliers
(c) Extreme values do not affect the mean
(d) Mean of the data cannot be corrupted

v. A qualitative forecast _____ **1**
(a) Predicts the quality of the new product
(b) Predicts the direction, but not the magnitude, of change in a variable
(c) Is a forecast that is classified on a numerical scale from 1 to 10
(d) Is a forecast that is based on econometric methods

vi. What is the first step in time series analysis? **1**
(a) Perform preliminary regression calculations
(b) Calculate a moving average
(c) Plot the data on a graph
(d) Identify relevant correlated variables

vii. Forecasts are referred to as naïve if they _____ **1**
(a) Are based only on past values of variables
(b) Are short-term forecasts
(c) Are long-term forecasts
(d) Generally, result in incorrect forecasts

viii. Which of the following is not one of the four types of variation that is estimated in time-series analysis? **1**
(a) Predictable (b) Trend
(c) Cyclical (d) Irregular

ix. Which one of the following is not a method to find forecast error? **1**
(a) Mean forecast error (b) Tracking signal
(c) Mean absolute deviation (d) Regression

x. What will be tracking signal of the given data? **1**

Period	Demand	Forecast
1	12	14
2	14	16
3	14	14
4	16	14
5	16	18

(a) 0.5 (b) 1 (c) -1 (d) 0

Q.2 i. Discuss different features of a good forecasting. **2**
ii. What is the difference between forecasting, planning, and goals? **3**
iii. What are the basic steps in a forecasting task? **5**
OR iv. Explain the impact of a good forecasting in business management. **5**

Q.3 Attempt any two:
i. What types of data features can you observe in a time plot? **5**
ii. What types of plots can you use to analyze seasonal patterns? What do they display? **5**
iii. What does the correlation coefficient measure? Interpret some possible values of the correlation coefficient. **5**

Q.4 Attempt any two:
i. How would you calculate the standard error of the regression? What does it measure? **5**
ii. What is the difference between qualitative and quantitative forecasting? **5**
iii. How does multiple regression differ from the simple one? Describe the components of multiple regression. **5**

Q.5 Attempt any two:
i. How do one period ahead forecasts by exponential smoothing differ from a naive forecast or a moving average forecast? **5**
ii. Define stationary time series. Give examples of types of non-stationarity. **5**
iii. Describe the principle of exponential smoothing. **5**

Q.6 Attempt any two:
i. What are the 4 types of forecast error? Compare their importance in brief. **5**
ii. The actual and forecasted demands of a product are as shown below: **5**

Period	Actual Demand	Forecasted Demand
1	180	190
2	170	190
3	165	190
4	170	190
5	200	190

Evaluate the forecast error measured in terms of Mean Absolute Deviation.

Marking Scheme
Forecasting Techniques for Analytics (T) - MS5CO37

Q.1 i. Which of the following is not a step of decision process? **1**

d) Implement and monitor the result

ii. Which forecasting would be easy to predict based on time horizon? **1**

b) Short range

iii. Which of the following is a drawback of filling in a global constant for the missing value? **1**

c) It may project wrong trend in data

iv. Which of the following is true about the arithmetic mean? **1**

a) It is sensitive to outliers

v. A qualitative forecast _____ **1**

b) Predicts the direction, but not the magnitude, of change in a variable

vi. What is the first step in time series analysis? **1**

c) Plot the data on a graph

vii. Forecasts are referred to as naïve if they _____ **1**

a) Are based only on past values of variables

viii. Which of the following is not one of the four types of variation that is estimated in time-series analysis? **1**

a) Predictable

ix. Which one of the following is not a method to find forecast error? **1**

d) Regression

x. What will be tracking signal of the given data? **1**

Period	Demand	Forecast
1	12	14
2	14	16
3	14	14
4	16	14
5	16	18

d) 0

Q.2 i. Discuss different features of a good forecasting. **2**

Each features with justification - 1 mark each

ii. What is the difference between forecasting, planning, and goals? **3**

Each point of difference - 1 mark each

OR iii. What are the basic steps in a forecasting task? **5**

Name of step - 2 mark

Discussion -3 marks

iv. Explain the impact of a good forecasting in business management. **5**

Each point with discussion - 1 mark each

Q.3 Attempt any two

i. What types of data features can you observe in a time plot? **5**

Each point with discussion - 1 mark each

ii. What types of plots can you use to analyze seasonal patterns? What do they display? **5**

Types of plots - 2 marks

Discussion - 3 marks

iii. What does the correlation coefficient measure? Interpret some possible values of the correlation coefficient. **5**

correlation coefficient measure - 4 marks

possible values - 1 marks

Q.4 Attempt any two

i. How would you calculate the standard error of the regression? What does it measure? **5**

Method - 3 marks

What does it measure? - 2 marks

ii. What is the difference between qualitative and quantitative forecasting? **5**

Each point of difference - 1 mark each

iii. How does multiple regression differ from the simple one? Describe the components of multiple regression. **5**

Each point of difference - 1 mark each

Q.5 Attempt any two

i. How do one period ahead forecasts by exponential smoothing differ from a naive forecast or a moving average forecast? **5**

Each point with discussion - 1 mark each

ii. Define stationary time series. Give examples of types of non-stationarity. **5**

Definition - 3 marks
Example of each - 2 mark

iii. Describe the principle of exponential smoothing. **5**

Each point with discussion - 1 mark each

Q.6 Attempt any two:

i. What are the 4 types of forecast error? Compare their importance in brief. **5**

Types of forecast error - 3 marks
Significance - 2 mark

ii. The actual and forecasted demands of a product are as shown below: **5**

Period	Actual Demand	Forecasted Demand
1	180	190
2	170	190
3	165	190
4	170	190
5	200	190

Evaluate the forecast error measured in terms of Mean Absolute Deviation.
Ans: 17

iii. The actual and forecasted demands of a item are as shown below: **5**

Month	Actual Demand	Forecasted Demand
April	225	200
May	220	240
June	285	300
July	290	270
August	250	230

Evaluate the forecast error measured in terms of Mean Absolute Percent Error (MAPE).

Ans: 8.072

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