JUNE 2013 EXAMINATION

DATE: 7 JUNE 2013

TIME: 09H00 – 11H00
TOTAL: 100 MARKS

DURATION: 2 HOURS
PASS MARK: 40%

(XN-88)
FORECASTING AND DEMAND MANAGEMENT

THIS EXAMINATION PAPER CONSISTS OF 3 SECTIONS:

SECTION A: CONSISTS OF:
(i) 10 MULTIPLE-CHOICE QUESTIONS (10 MARKS)
(ii) 5 TRUE OR FALSE QUESTIONS (10 MARKS)
(iii) 10 MATCHING-STATEMENT QUESTIONS (10 MARKS)

ANSWER ALL THE QUESTIONS

SECTION B: CONSISTS OF 3 SHORT QUESTIONS
ANSWER ALL THE QUESTIONS (50 MARKS)

SECTION C: CONSISTS OF 4 INTERPRETATIVE QUESTIONS
ANSWER ANY TWO OF THE QUESTIONS (20 MARKS)

INSTRUCTIONS:

1. Read the following instructions carefully before answering the paper, as failure to act upon them will result in a loss of marks.
2. Write your answers in your answer book, which is provided in the exam.
3. Ensure that your name and student number are clearly indicated on your answer book.
4. Write your answers in either blue or black ink in your answer book.
5. Read each question very carefully before you answer it and number your answers exactly as the questions are numbered.
6. Begin with the question for which you think you will get the best marks.
7. Note the mark allocations for each question – give enough facts to earn the marks allocated. Don't waste time by giving more information than required.
8. You are welcome to use diagrams to illustrate your answers.
9. Please write neatly – we cannot mark illegible handwriting.
10. Any student caught cheating will have his or her examination paper and notes confiscated. The College will take disciplinary measures to protect the integrity of these examinations.
11. If there is something wrong with or missing from your exam paper or your answer book, please inform your invigilator immediately. If you do not inform your invigilator about a problem, the College will not be able to rectify it afterwards, and your marks cannot be adjusted to allow for the problem.
12. This paper may be removed from the examination hall after the examination has taken place.

NOTE: YOU MAY USE A NON-PROGRAMMABLE CALCULATOR.
(i) **MULTIPLE-CHOICE QUESTIONS**

Choose the correct option for each of the following. Write only the question number and your chosen answer. For instance, if you think that the correct answer for number 1 is (a), then write it as 1. (a).

1. For a given product demand the time series trend equation is $25.3 + 2.1X$. Which one of the following is the forecast of demand for period seven?
   
   (a) 30  
   (b) 41,2  
   (c) 40,4  
   (d) 40

2. Which one of the following smoothing constants would make an exponential smoothing forecast equivalent to a naive forecast?
   
   (a) 0  
   (b) 0,01  
   (c) 0,5  
   (d) 1,0

3. The primary purpose of the mean absolute deviation (MAD) in forecasting is to:
   
   (a) estimate the trend line.  
   (b) eliminate the forecast errors.  
   (c) measure forecast accuracy.  
   (d) seasonally adjust the forecast.

4. Which one of the following values of alpha would cause exponential smoothing to respond the most quickly to forecast errors?
   
   (a) 0  
   (b) 0,10  
   (c) 0,20  
   (d) 0,40

5. Increasing the number of periods in a moving average will accomplish greater smoothing, but at the expense of:
   
   (a) managerial understanding.  
   (b) accuracy.  
   (c) stability.  
   (d) responsiveness to changes.
6. Which one of the following time series models uses past forecasts and past demand to generate a new forecast?

(a) naive  
(b) moving average  
(c) weighted moving average  
(d) exponential smoothing

7. The fundamental difference between cycles and seasonality is:

(a) the duration of the repeating patterns.  
(b) the magnitude of the variations.  
(c) the ability to attribute the pattern to a cause.  
(d) All of the above.

8. The forecasting model that pools the opinions of a group of experts or managers is known as:

(a) the consumer market survey model.  
(b) the management coefficients model.  
(c) the jury of executive opinion model.  
(d) multiple regression.

9. Which one of the following uses three types of participants namely, decision makers, staff personnel, and respondents?

(a) executive opinions  
(b) consumer surveys  
(c) the delphi method  
(d) sales force composites

10. Which one of the following is not a step in the forecasting process?

(a) determine the use of the forecast  
(b) eliminate any assumptions  
(c) determine the time horizon  
(d) select a forecasting model(s)

(ii) TRUE OR FALSE QUESTIONS

Indicate whether the following statements are True or False. Motivate all your answers.

1. At the lower level, forecasting forms the basis of long-term strategy formulation.

2. Qualitative techniques are subjective (or judgmental), and are based on estimates and opinions.

3. Regression analysis and leading indicators are qualitative technique methods.
4. An intermediate or medium term forecast can be used for budgetary planning, cost control, marketing new products and sales force compensation plans.

5. Aggregate demand exists only as part of independent items.  

(iii) **MATCHING-STATEMENT QUESTIONS**

Match the statements in Column B to the terms in Column A. Write down the answers only, for example 1. (a).

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. demand management</td>
<td>(a) long-term movements up or down in the data</td>
</tr>
<tr>
<td>2. forecasting</td>
<td>(b) produces short-term variations</td>
</tr>
<tr>
<td>3. qualitative forecasting</td>
<td>(c) most suitable when you have a unique product that is uncontested in the marketplace</td>
</tr>
<tr>
<td>4. nominal group technique</td>
<td>(d) all non-typical behaviours not accounted for by the other classifications</td>
</tr>
<tr>
<td>5. user expectations forecasting method</td>
<td>(e) wave-like variations that last for more than one year</td>
</tr>
<tr>
<td>6. a 'must do' forecast</td>
<td>(f) the management of resources, processes and activities so that the needs of internal and external customers can be met</td>
</tr>
<tr>
<td>7. trends patterns</td>
<td>(g) based on a target that must be achieved</td>
</tr>
<tr>
<td>8. random variations</td>
<td>(h) best suites the launch of a new product</td>
</tr>
<tr>
<td>9. seasonality</td>
<td>(i) prevents a single person from dominating the discussion</td>
</tr>
<tr>
<td>10. cycles</td>
<td>(j) the action of predicting what will happen in the future</td>
</tr>
</tbody>
</table>

[30]
SECTION B: SHORT QUESTIONS

ANSWER ALL THE QUESTIONS

QUESTION 1

(a) Complete the table below by filling in the characteristics of the forecasting techniques:

<table>
<thead>
<tr>
<th>Technique</th>
<th>Time horizon</th>
<th>Model complexity</th>
<th>Model accuracy</th>
<th>Data requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delphi</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple average</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Give four objectives of demand management activities.

QUESTION 2

(a) Briefly explain market research as a forecasting tool.

(b) Explain the managerial use of demand forecasting in the short run with regard to:

i. production planning

ii. sales forecasting

iii. identify the reasons for qualitative forecasting.

(c) What are the shortcomings of the Delphi technique.

(d) Define the term 'forecasting error'.

QUESTION 3

(a) i. List two roles a firm can do to manage independent demand.

   ii. Identify the reasons for biased error.

(b) Give two reasons for forecasting error.
SECTION C: INTERPRETATIVE QUESTIONS

ANSWER ANY TWO OF THE QUESTIONS

QUESTION 1

The chancellor of Soweto University wants to forecast student enrollments for this academic year based on the following historical data: 5 years ago; 15,000, 4 years ago; 16,000, 3 years ago; 18,000, 2 years ago; 20,000, Last year; 21,000. What is the forecast for this year using exponential smoothing with $\alpha = 0.4$, if the forecast for two years ago was 16,000? [10]

AND / OR

QUESTION 2

Maskom Enterprises found out that, in a four-month period, the best forecast is given by using 40% of the actual sales (in units) of the most recent month, 30% of the sales of two months before, 20% of the sales of three months before and 10% of the sales of four months before.

The actual sales (in units) were as follows:

- month 1: 100
- month 2: 90
- month 3: 110
- month 4: 95

Using the weighted simple moving average technique:

(a) Calculate the forecast for month five. (5)

(b) Calculate the forecast for month six. (5) [10]
QUESTION 3

(a) If a Least Squares model is: \( Y = 25 + 5x \), and \( x \) is equal to 10, what is the forecast value using this model? (2)

(b) Forecast the sales for period 5 using time series method

<table>
<thead>
<tr>
<th>Period</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>?</td>
</tr>
</tbody>
</table>

(2)

(c) What is the MAD value given the forecast values in the table below?

<table>
<thead>
<tr>
<th>Month</th>
<th>Sales</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>220</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>250</td>
<td>255</td>
</tr>
<tr>
<td>3</td>
<td>210</td>
<td>205</td>
</tr>
<tr>
<td>4</td>
<td>300</td>
<td>320</td>
</tr>
<tr>
<td>5</td>
<td>325</td>
<td>315</td>
</tr>
</tbody>
</table>

(6) [10]

AND / OR

QUESTION 4

Below is the demand for a product in each of the last five months. Use a two-month average to generate a forecast for demand in month six.

<table>
<thead>
<tr>
<th>Month</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand ('00s)</td>
<td>13</td>
<td>17</td>
<td>19</td>
<td>23</td>
<td>24</td>
</tr>
</tbody>
</table>

[10] [20]

Section A: 30 marks
Section B: 50 marks
Section C: 20 marks
TOTAL: 100 MARKS