JUNE 2012 EXAMINATION
DATE: 8 JUNE 2012
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) 10 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 2 LONG ANSWER QUESTIONS
ANSWER BOTH 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.
SECTION A

(30 MARKS)

ANSWER ALL THE QUESTIONS

(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. Forecasts are usually classified by time horizon into the three categories of:
   (a) short-range, medium-range and long-range.
   (b) finance / accounting, marketing and operations.
   (c) strategic, tactical and operational.
   (d) exponential smoothing, regression and time series.

2. Which of the following is not a type of qualitative forecasting?
   (a) executive opinions
   (b) moving average
   (c) consumer surveys
   (d) the Delphi method

3. Forecasting demand for cement, steel, car and mobile can best be grouped under which two categories?
   (a) category 1 (cement and car); category 2 (steel and mobile)
   (b) category 1 (cement and mobile); category 2 (steel and car)
   (c) category 1 (cement and steel); category 2 (car and mobile)
   (d) None of the above.

4. The forecasting model that pools the opinions of a group of experts or managers is known as the:
   (a) sales force composition model.
   (b) jury of executive opinion model.
   (c) consumer market survey model.
   (d) management coefficients model.

5. The temperature on Tuesday was 23°C, on Wednesday it was 21°C and on Thursday it was 28°C. A naive forecast for the temperature next Wednesday would be:
   (a) 23°C.
   (b) 21°C.
   (c) 24°C.
   (d) 28°C.
6. An example of long term planning involving strategic decision would be:
   (a) production planning.
   (b) inventory control.
   (c) employment changes.
   (d) product changes.

7. Time-series data may exhibit which of the following behaviours?
   (a) trend
   (b) random variations
   (c) seasonality
   (d) All of the above.

8. Which of the following smoothing constants would make an exponential smoothing forecast equivalent to a naive forecast?
   (a) 0
   (b) 1 divided by the number of periods
   (c) 0.5
   (d) 1.0

9. Given forecast errors of –2, 4, 7, and –3, what is the mean absolute deviation?
   (a) 5
   (b) 6
   (c) 4
   (d) 8

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

(ii) **TRUE OR FALSE QUESTIONS**

Choose whether the following are True or False. Write only True or False for your answer.

1. Forecasting energy demand in order to construct power stations in 5 to 10 years would be a short-term horizon.

2. Forecasts are more accurate for individual items than for a group of items.

3. Qualitative forecasting techniques typically concern long-term forecasting and are primarily used in situations where there is judged to be no relevant past data (numbers) on which a forecast can be based.

4. Sales force composite is a top-bottom approach to forecasting.
5. The naive approach to forecasting assumes that demand in the next period is equal to demand in the most recent period.

6. Gradual, long-term movement in time-series data is called random variation.

7. Exponential smoothing gives greater weight to more recent observations and takes into account all previous observations.

8. When demand is stable, a six-month moving average is better than a three-month moving average.

9. Special cause is variation for which there is known or knowable reason.

10. A flow chart is an example of a quality improvement tool. [10]

(iii) MATCHING-STATEMENT QUESTIONS

Match the statements in Column B to the statements 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. market research forecasting method</td>
<td>(a) sales on new business</td>
</tr>
<tr>
<td>2. Delphi technique</td>
<td>(b) an annual forecast</td>
</tr>
<tr>
<td>3. determining the time horizon</td>
<td>(c) adopts regional level forecasts by division in rand sales and margins</td>
</tr>
<tr>
<td>4. master production schedule (MPS)</td>
<td>(d) suitable for forecasting the demand of the product</td>
</tr>
<tr>
<td>5. material requirements planning (MRP) MRP</td>
<td>(e) suitable for launching new products</td>
</tr>
<tr>
<td>6. consider prior year's sales when conducting this</td>
<td>(f) adopts brand level forecasts by channel and in sales volumes</td>
</tr>
<tr>
<td>7. develop customer profiles when forecasting this</td>
<td>(g) adopts regional level forecasts by product category in rand</td>
</tr>
<tr>
<td>8. the finance department</td>
<td>(h) a step which is used in the forecasting process</td>
</tr>
<tr>
<td>9. the sales department</td>
<td>(i) determines the material requirements at the different levels of the production structure</td>
</tr>
<tr>
<td>10. the marketing department</td>
<td>(j) translates the master plan into specific material requirements</td>
</tr>
</tbody>
</table>

[10]

[30]
SECTION B: SHORT QUESTIONS  
(50 MARKS)

ANSWER ALL THE QUESTIONS

QUESTION 1
(a) List the qualitative forecasting techniques you have learnt in the course.  (7)
(b) In your opinion, what factors are considered when selecting a method for forecasting?  (4)
(c) List four reasons why production planners need to forecast.  (4)
(d) i. What are the characteristics of qualitative techniques?  (3)
     ii. Under which circumstances are qualitative techniques used?  (2)  [20]

QUESTION 2
Explain the following quantitative techniques:
(a) simple moving averages  (2)
(b) exponential smoothing  (2)
(c) regression analysis  (2)
(d) trend projection  (2)
(e) history analogy  (2)  [10]

QUESTION 3
(a) Explain the behaviours exhibited by time series data.  (8)
(b) i. What are the characteristics exhibited by simple moving average technique?  (2)
     ii. Why is exponential smoothing considered a weighted average technique?  (2)
(c) Explain the following types of demand:
    i. independent demand  (2)
    ii. dependent demand  (2)
    iii. aggregate demand  (2)
    iv. item demand  (2)  [20]

[50]
SECTION C: LONG ANSWER QUESTIONS (20 MARKS)

ANSWER BOTH QUESTIONS

QUESTION 1

(a) Mzansi clothing manufactures had sales of R1 million last year. The company expects all of its customer contracts to be renewed and they expect to land new contracts worth R 100 000. Industry experts predict 10 percent market growth in the current year. Calculate the current year's sales projection for the company. (5)

(b) For a given product demand, the time series trend equation is $10 + 0.02X$. What is your forecast of demand for period 7? (2)

(c) Given an actual demand of 103, a previous forecast value of 99, and an alpha of 0.4, what is the exponential smoothing forecast for the next period? (3) [10]

QUESTION 2

From the records of previous orders, management of Hope City Engineering have accumulated the following data for the past ten months:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders</td>
<td>120</td>
<td>90</td>
<td>100</td>
<td>75</td>
<td>110</td>
<td>50</td>
<td>75</td>
<td>130</td>
<td>110</td>
<td>90</td>
</tr>
</tbody>
</table>

(a) Calculate the monthly demand forecast for February through April using the naive method. (3)

(b) Calculate the monthly demand forecast for April using a 3-month simple moving average. (3)

(c) Calculate the monthly demand forecast for April using a 3-month weighted moving average. Use weights of 0.5, 0.33, and 0.17, with the heavier weights on the more recent months. (4) [10] [20]

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