UNIVERSITY OF ESWATINI

FACULTY OF COMMERCE

DEPARTMENT OF BUSINESS ADMINISTRATION

FINAL EXAMINATION PAPER; IDE STUDENTS

NOVEMBER 2018

TITLE OF PAPER	:	MANAGEMENT SCIENCE 1
COURSE CODE	:	BA 302/ BA 406
TIME ALLOCATED	:	THREE (3) HOURS
TOTAL MARKS	:	100 MARKS

INSTRUCTIONS:

1. TOTAL NUMBER OF QUESTIONS IN THIS PAPER IS (4)

2. THE PAPER CONSISTS OF SECTION A AND SECTION B

3. ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO [2] QUESTIONS IN SECTION B.

4. THE MARKS ALLOCATED FOR A QUESTION OR PART OF A QUESTION ARE INDICATED AT THE END OF EACH QUESTION OR PART OF THE QUESTION.

5. CREDIT WILL BE AWARDED FOR QUALITY, LAYOUT, ACCURACY, AND EXPLANATIONS FOR STEPS USED TO SOLVE THE PROBLEMS.

THIS PAPER MUST NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR.

QUESTION 1.1

Mary is considering opening a grocery store in Manzini town. She is evaluating 3 sites: Down town, Bunu Mall and Riverstone. Mary calculated the value of successful stores at these locations with Bunu Mall being E300, 000, Downtown being E250, 000 and Riverstone being E400, 000. Mary also knows that the losses if unsuccessful would be E100, 000 at either Downtown or Bunu Mall and E200, 000 at Riverstone. Mary figures her chances to be 50% Downtown, 75% at Riverstone and 60 at Bunu Mall. A friend also suggested that Mary could choose to not open a grocery store. Use the decision tree method to recommend the best option for Mary   **[20 MARKS]**

QUESTION 1.2

Helen Murvis, hospital administrator for Portland General Hospital, is trying to determine whether to build a large wing onto the existing hospital or to build a small wing. If the population of Portland continues to grow, a large wing could return $150,000 to the hospital each year. If the small wing were built, it would return $60,000 to the hospital each year if the population continues to grow. If the population of Portland remains the same, the hospital would encounter a loss of $85,000 if the large wing were built. Furthermore, a loss of $45,000 would be realized if the small wing was constructed and the population remains the same. Unfortunately, Helen does not have any information about the future population of Portland.

(a) What type of decision problem is that?

(b) Construct a decision table.

(c) Using the equally likely criterion determines the best alternative.   **[20 MARKS].**

QUESTION 1.3

Given annual demand of 2000 bags of cement, cost of replenishing an order of R400, a carrying cost percentage of 25 per cent of the purchase price per bag of R100, determine the Economic Order Quantity level and total minimum inventory cost when you have a container that can only take 250 bags.   **[10 MARKS]**

QUESTION 2.

a. Explain the different forms of quality costs   **[12 MARKS]**
b. Discuss quality attributes you would use to assess quality in a service organisation

[13 MARKS]

QUESTION 2.

Continental Corporation specialises in the sales and service of video cameras. These cameras are imported from Japan by monthly order using the internet. A 1-month lead time makes accurate forecast of the next month's expected demand extremely important.

The company had monthly sales compiled for the past 12 months as shown in the following table.

Monthly sales of video cameras during the past year

Month	Camera Sales
1	1 850
2	1 920
3	1800
4	1 875
5	1*960
6	2 040
7	1 980
8	2 100
9	2 070
10	2 150
11	2 210
12	2 500

What are forecast sales for month 13?

a) using the 3 month moving average forecasting method   **[10 MARKS]**
b) Use the exponential smoothing forecasting method with a smoothing factor (α) of 0.4 and assuming that the forecast for period 1 is the same as actual sales for that period

[10 MARKS]

c) Based on the mean absolute deviation technique for measuring forecast accuracy, which one of the above two forecasting method is superior to the other?   **[5 MARKS]**

QUESTION 4.

Consider some youths who have teamed up to manufacture car security systems. They specialise in making two types of anti-burglar gadgets. Type 1 is made up of a length of steel rod with two hook-like ends, one of which is to fit under the clutch pedal and the other end fits over the steering wheel. The two hooks are then held in place and secured by an adjustable steel latch-padlock arrangement. Type 2 is also made up of the same length of steel rod connecting two steel plate formed shapes. One form fits over gear lever while the other fits over the handbrake lever.

The two forms and the steel rod are then held in place in a manner similar to that used by Type 1 lock, using a latch-padlock arrangement. The youths are able to sell all the car locks they can produce because of the recent increases in car thefts. Unfortunately, they can only get a maximum of 50 padlocks, 6m2 of steel sheet and 30 m of steel rods per week. Each clutch lock is made up of 0,75m rod. Each gear lock requires 0,4 m rod and 0,2m2 steel sheet. Of course, each lock type is fitted with only one padlock. A clutch lock brings in a profit contribution of $50, while a gear lock brings in $70.

How many of each type of locking system should the youths produce in order to maximise their total weekly profit contribution?   **[25 MARKS]**

END OF QUESTION PAPER: GOOD LUCK !