



**AFRICA  
UNIVERSITY**

*(A United Methodist-Related Institution)*

***"Investing in Africa's Future"***

**COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND  
GOVERNANCE**

**COURSE TITLE: MMS 506 – OPERATIONS MANAGEMENT**

**SEMESTER 2: FINAL EXAMINATION APRIL 2018**

**LECTURER: MR. T NEMAUNGA**

**TIME: 3 HOURS**

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***INSTRUCTIONS***

Answer all questions in section A and all questions in section B

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Start **each** question, in Section B, on a new page in your answer booklet.

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The marks allocated to **each** question are shown at the end of the section.

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Credit will be awarded for logical, systematic and neat presentations.



## SECTION A

Answer ALL Questions

- 1) What is the advantage of “doing things right the first time”? [2]
- 2) Briefly explain the difference between an order qualifier and order winner? [2]
- 3) Draw a simple diagram of the product life –cycle, highlighting the major stages? [3]
- 4) What is the difference between Partial Productivity and Multi-Factor Productivity? [1]
- 5) What does RFID stand for? What is the advantage of using RFID in retail business? [1]
- 6) A manager checked production records and found that a worker produced 160 units while working 40 hours. In the previous week, the same worker produced 138 units while working 33 hours. Did the worker’s productivity increase, decrease, or remain the same? [2]
- 7) Outline the formula for **Total productivity growth**? [3]
- 8) What is Delayed differentiation? [2]
- 9) Give two reasons why might some managers resist a change from a more traditional mode of production to lean production? [2]
- 10) Phillip Crosby, one of the quality gurus, said “quality is free”. What does that mean? [1]
- 11) Explain the difference between make-to-order and make-to-stock, giving an example? [2]
- 12) Briefly explain why it is important for the organization to produce at the optimal output level? [2]
- 13) Explain how improved quality and productivity can lead to higher profits? [2]



## SECTION B

Answer All Questions.

- 1) A firm plans to begin production of a new small appliance. The manager must decide whether to purchase the motors for the appliance from a vendor at \$7 each or to produce in-house. Either of two processes could be used for in-house production; one would have an annual fixed cost of \$160 000 and a variable cost of \$5 per unit, and the other would have an annual fixed cost of \$190 000 and a variable cost of \$4 per unit. Determine the range of annual volume for which each of the alternatives would be best?

[2]

- 2) Determine the Productivity for the following situations:

a) Four workers installed 720 square yards of carpeting in eight hours?

[1]

b) A machine produced 68 usable pieces in two hours?

[1]

- 3) The following is information from Apex Holdings.

<u>Apex Holding</u>		
	2010	2011
<b>Output</b>		
Tonnes of Wheat	100	150
<b>Inputs</b>		
Direct Labor hours	20	28
Direct labor cost	\$180	\$350
Energy used (Kwh)	350	400
Energy cost	\$5	\$6
Raw materials used (Kg)	120	185
Raw materials cost	\$30	\$40

- a) Calculate the Total Productivity for 2010 and 2011 respectively? [2]
- b) Calculate multi-factor Productivity, for labor and energy, in 2010 and 2011? [2]
- c) Calculate Partial-factor Productivity, for raw materials, in 2010 and 2011? [2]
- d) Calculate Total productivity growth for the two years, taking 2010 as the base year? Comment on the results? [3]
- 4) A producer of pottery is considering the addition of a new plant to absorb the backlog of demand that now exists. The primary location being considered will have a fixed cost of \$9200 per month and variable cost of \$0,70 per unit produced. Each item is sold to retailers at a price that averages \$0,90.
- a) What volume per month is required in order to break even? [2]
- b) What profit would be realized on a monthly volume of 61000 units? [1]
- c) What volume is needed to obtain a revenue of \$23 000 per month? [1]
- d) What volume is needed to provide a profit of \$16 000 per month? [1]



- 5) A company that handles hazardous waste wants to minimize the shipping cost for shipments to a disposal centre from five receiving stations it operates. Given the locations of the receiving stations and the volumes to be shipped daily, determine the location of the disposal centre. [3]

Location of Processing Station (x,y)	Volume , Tonnes per Day
(10, 5)	26
(4, 1)	9
(4, 7)	25
(2, 6)	30
(8, 7)	40

- 6) A manager has received an analysis of several cities being considered for a new office complex. The data (10 points maximum) are:

	LOCATION		
Factor	A	B	C
Business services	9	5	5
Community services	7	6	7
Real estate cost	3	8	7
Construction costs	5	6	5
Cost of Living	4	7	8
Taxes	5	5	4
Transportation	6	7	8

- a) If the manager weights the factors equally, using the factor rating method which one will be the best location to locate the new office complex? [2]
- b) If business services and construction costs are given weights that are double the weights of the other factors, using the factor rating method, which one will be the best location for the new office complex? [2]
- 7) A local distributor for a national tire company expects to sell approximately 9600 tires of a certain design next year. Annual carrying cost is \$16 per tire, and the ordering cost is \$75 per order. The distributor operates 288 days a year.
- a) What is the EOQ? [2]
- b) How many times per year does the store reorder? [1]
- c) What is the length of the order cycle time? [1]
- d) If the lead time is 2days, what is the reorder point? [1]