

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS 2012/2013

THIRD YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF BUSINESS  
ADMINISTRATION WITH IT JAN-APRIL 2013 SEMESTER.

ABA315: QUANTITATIVE METHODS I (KISUMU LEARNING CENTRE ) DATE :

INSTRUCTIONS:

1. This paper contains FIVE questions
2. Answer question ONE and ANY other two questions
3. Write all answers in the booklet provided
4. Relevant tables are provided

QUESTION ONE

(COMPULSORY 30MAKRS)

- a) Explain the following concepts as used in project Networking and Planning.
- i) Parallel and dummy activities
  - ii) Successor and predecessor events
  - iii) Project and an activity.

(9marks)

b)

The following table represents sales data of Premium petrol sold by Total petrol station in Kisumu.

Month(t)	1	2	3	4	5	6	7	8
Sales(Kshs MILLIONS)	99	100	119	95	110	117	114	118

Required:

- (i) Forecasted values using each of the given values, with  $\alpha = 0.3$  and an initial forecast of 106.

(8 marks)

- (ii) MAD

(4marks)

c.) The annual demand of a product is 10,000 units. This item may be obtained from an outside supplier or subsidiary company. The relevant data for the procurement of the item are given below

	<b>From outside supplier</b>	<b>from subsidiary company</b>
<b>Cost per unit</b>	Kshs.15	Kshs.12.50
<b>Cost of placing an order</b>	Kshs.32	Kshs.28
<b>Carrying cost</b>	Kshs.3	Kshs.2

What purchase quantity and from which source should you recommend to procure. (5marks)

What would be the minimum total cost in that case? (4marks)

## QUESTION TWO

- a) List four basic rules governing drawing of a project network (4marks)
- b) A book store sells a particular book of tax laws for Kshs. 100. It purchases the book for Kshs. 80 per copy. Since some of the tax laws change every year the copies unsold at the end of a year becomes outdated and can be sold off for Kshs. 30 each. According to past experience the annual demand for the book is either 18 Or 19 Or 20 Or 21 and demand has always equal supply. The pay-off matrix depicting the above situation is given below.

Demand levels (no of copies) and their probabilities

Strategies	18 copies <b>(0.3)</b>	19 copies <b>(0.25)</b>	20 copies <b>(0.35)</b>	21 copies <b>(0.1)</b>
18	360	360	360	360
19	310	380	380	380
20	260	330	400	400
21	210	280	350	420

Required:

- The purchase strategy to adopt under EMV Principle.
- The purchase strategy to adopt under Maxmax principle
- The opportunity loss table

(16marks)

### QUESTION THREE

- a) Company XYZ Ltd produce a product whose annual demand is known to be 5,000units.the price per unit is Kshs. 10. The cost of placing an Oder is Kshs. 200 and the inventory carrying cost is 20% per unit price.

Required

- i. The most economic order size
- ii. The total relevant cost associated with this policy
- iii. The order cycle if the lead time is 7 days.

**(8marks)**

- b) A supplier is willing to supply this component and prepared to give discount as follows:

For ordering at least 1800, 2000,and 2,400 units ,a discount of 0.5%, 1%and1.5%respectively .Assuming that inventory carrying cost remain constant determine the most economic quantity that should be offered.

**(12marks)**

### QUESTION FOUR

- a) Outline three differences between CPM and PERT methods (3marks)
- b) A construction company is preparing for a project whose details are given below:

ACTIVITY	PRECEEDING ACTIVIES	DURATION (WEEKS)
A	-	9
B	-	3
C	A	8
D	A	2
E	A	3
F	C	2
G	C	6
H	C	1
J	B,D	4

<b>K</b>	<b>F,J</b>	<b>1</b>
<b>L</b>	<b>E,H,G,K</b>	<b>2</b>
<b>M</b>	<b>E,H</b>	<b>3</b>
<b>N</b>	<b>L,M</b>	<b>4</b>

Required:

- i) Project network diagram
- ii) Identify the critical path and project duration
- iii) Total float
- iv) List three possible reasons that may delay the project

(17marks)

#### QUESTION FIVE

- a) A dealer supplies you the following information with regard to a product dealt in by him:

**Annual demand** = 5000 units

**Cost per order** = Kshs 250

**Inventory carrying cost per** = 30% per unit of purchase.

**Price per unit** = Kshs 100

The dealer estimates that the annual cost of back-ordering the product will be Kshs.10 per unit.

Required:

- i) Economic order quantity.
- ii) Maximum shortage level.
- iii) Total variable cost associated with back-ordering policy. **(10marks)**

- b) Discuss five benefits of having an effective inventory management policy.

**(10marks)**

