



KIBABII UNIVERSITY COLLEGE

(A Constituent College of MasindeMuliro University of Science Technology)

P.O. Box 1699-50200 Bungoma, Kenya

Tel. 020-2028660/0708-085934/0734-831729

E-mail: enquiries@kibabiiuniversity.ac.ke

KIBABII UNIVERSITY COLLEGE
(A Constituent College of MasindeMuliro of Science & Technology)

UNIVERSITY EXAMINATIONS

2012 2013 ACADEMIC YEAR

**FOR THE DEGREE OF MASTER OF
BUSINESS ADMINISTRATION**

COURSE CODE: MBA 805

COURSE TITLE: TECHNOLOGY AND OPERATIONS MANAGEMENT

DATE: 24th JUNE 2013

TIME: 2.00PM – 5.00PM

Instructions to Candidates

Attempt Any Four Questions

QUESTION ONE

The activities of a project are tabled below with immediate predecessor, normal and crash time cost.

Activities	predecessor	Normal cost (f)	Normal time	Crash Cost	Crash Time
A	-	200	3	400	2
B	-	250	8	700	5
C	-	320	5	380	4
D	A	410	2	800	1
E	C	600	6	670	2
F	BE	400	10	950	6
G	BE	550	12	1000	6
H	D	300	11	400	9

There is f140 per day variable over head cost during the project.

- (a) Draw the project network corresponding to normal time (8 marks)
- (b) Determine the critical path, and the project duration that will minimize the total cost of the project (suitability crash activities so that normal duration may be reduced) (15 marks)
- (c) Determine total cost of completing the project in shortest possible time. (2 marks)

QUESTION TWO

A Firm plans to purchase at least 200 quintals of scrap containing high quality metal X low quality metal Y. It decides that the scrap to be purchased must contain at least 100 quintals of metal X and no more than 35 quintals of metal Y. The firm can purchase the scrap from two suppliers (A and B) in unlimited quantities. The percentage of metal X and Y in terms of weight in the scraps supplied by A and B is given below

Metals	Supplier A	Supplier B.
X	25%	75%
Y	10%	20%

The Price of A's scrap is \$ 200 per quintal and that of B's is \$ 400 per quintal. The firm wants to determine the quantities that it should buy from the two suppliers so that total cost is minimized

- (a) Solve the problem using linear programming (10 marks)
- (b) Highlight six major assumptions of linear programming (6 marks)
- (c) In a bank cheques are cashed a singleteller customers arrive in a passion manner at an average of 30 customer per hour. The teller takes on an average a minutue and a half to cash cheque.

Required.

- (i) Calculates the percentage of time teller is busy (4 marks)
- (ii) Calculate the average time a customer is expected to walk (5 marks)

QUESTION THREE

- a) Due to absence of a workman an officer has to assign four out of five different jobs to four workers, with the performance matrix given below.

OPERATIONS

JOBS		A	B	C	D
	1	3	6	5	3
	2	4	9	3	2
	3	11	2	4	6
	4	10	4	6	5
	5	11	12	14	10

Find out an optimum assignment and the minimum total ratings (10 marks)

- b) Write brief explanatory notes on the following operations management terminology
 - (i) Polydral Convex (2 marks)
 - (ii) Total Float (2 marks)
 - (iii) Pessimistic time estimate (2 marks)
 - (iv) Event (2 marks)

- c) Solve the following game and determine the value of the game

Player 1

Strategy 1 Strategy 2

Strategy 1	[4	1
Player x		2	3
Strategy 2]		

(7 marks)

QUESTION FOUR

Technological capabilities relate to the firm's productive prowess in providing goods or services to customers worldwide in terms of globally competitive criteria of cost quality and performance. Expand the above statement bringing out clearly the concept of

- (i) Just in time (11 marks)
- (ii) Total quality Management (8 marks)
- (iii) Computer integrated manufacturing (6 marks)

QUESTION FIVE

Bungoma Enterprises has four warehouses from which supplies are drawn for four retail customers. The enterprise deals in a single product, the supplier of which at each warehouse are:

Warehouse No **Supply (Unit)**

1 140

2 260

3 360

4 220

Customer No. **Demand (Units)**

A 200

B 320

C 250

D 210

Conveniently total supply out the warehouse is equal to total demand from the customer. The table below gives transportation costs per unit shipped from each warehouse to each customer.

CUSTOMER

	A	B	C	D
Warehouse	1	7	6	6
	2	5	7	7
	3	8	5	6
	4	4	3	8

- (i) Determine the supplies to dispatch from each of the warehouse to each customers so as to minimize overall transportation cost (9 marks)
(use least cost method)
- (ii) Is the solution obtained above optimal or sub-optimal (16 marks)