

**KABARAK**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**2009/2010 ACADEMIC YEAR**

**FOR THE DEGREE OF BACHELOR OF COMMERCE**

**COURSE CODE: BMGT 410**

**COURSE TITLE: OPERATION RESEARCH.**

**STREAM: Y4S1**

**DAY: MONDAY**

**TIME: 9.00 – 11.00 A.M.**

**DATE: 09/08/2010**

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**INSTRUCTIONS:**

1. Read instruction on the answer booklet carefully.
2. The paper contains **FOUR** questions
3. Attempt question **ONE** and any other **TWO** questions
4. **DO NOT** write anything on this question paper.

**PLEASE TURNOVER**

## QUESTION ONE

- 1 a) What is the scope of operation s research? **(5mks)**
- b) Illustrate clearly the various structural classifications of models. **(5mks)**
- c) Briefly explain the advantages of model. **(4mks)**
- d) OR uses a systems approach. Explain. **(4mks)**
- e) Briefly describe the assumption of Linear Programming. **(4mks)**
- f) What are the reasons for maintaining inventory **(4mks)**
- g) Differentiate between Critical Path Method and Programme Evaluation and Review Technique (PERT) as network scheduling methods . **(4mks)**

2. a) A company produces two types of hats. Every hat A require twice as much labour time as the second hat B then it can produce a total of 500 hats a day. The market limits daily sales of hat A and hat B to 150 and 250 hats respectively. The profits on hats A and B are sh.8 and sh.5 respectively. Solve graphically to obtain the optimal product mix. **(7mks)**

- b) Obtain an initial feasible solution using Vogel's approximation method.

Source	P	Q	R	S	SUPPLY
A	21	16	25	13	11
B	17	18	14	23	13
C	32	17	18	41	19
Demand	6	10	12	15	43

- c) An item sells for ksh.4 per unit but 10% discount is offered for lots of 150 or more. A manufacturing unit that consumes this item at the rate of 20 items per day wants to decide whether or not to take advantage of discount. The set-up cost for ordering a lot is Ksh.50 and holding cost per unit per day is Ksh.0.030. Will it be economical for the manufacturing unit to take advantage of discount? (Assume 365 working days in a year). **(8mks)**

3. a) a small maintenance project consists of the following jobs whose precedence relationships are given below.

Job	1 - 2	1- 3	2 -3	2 - 5	3 - 4	3 - 6	4 - 5	4 - 6	5 - 6	6 - 7
Duration (days)	15	15	3	5	8	12	1	14	3	14

- i. Draw a network diagram representing the project. **(5mks)**
- ii. Find the critical path and the total project time. **(5mks)**