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SCHOOL OF BUSINESS AND ECONOMICS
UNIVERSITY EXAMINATION FOR BACHELOR OF BUSINESS ADMINISTRATION
WITH IT

COURSE CODE: ABA 402
COURSE TITLE: QUANTITATIVE METHODS IN BUSINESS II
EXAM VENUE: **STREAM:**
DATE: **EXAM SESSION:**
TIME: 2.00 HOURS

Instructions:

- 1. Answer any three Questions (Question One is Compulsary)**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

ABA 402 (QUANTITATIVE METHODS IN BUSINESS II)

Q1. The following results relate to BBA students in a

Study hours	40	32	64	46	54	64
Exam score	64	61	84	70	88	92

Required:

- a) Determine a suitable regression line equation (10mks)
 - i. Predict the exam score for 69 study hours. (2mks)
 - ii. State any 3 assumptions of this model (3mks)
- b) Argus furniture co. produces beds and wall units. Each bed takes 8 hours of carpentry and 4 hours of painting. Each wall unit takes 6 hours for carpentry and 2 hours for painting. During the current production period 480 hours are available for carpentry and 200hours for painting. Each bed yields £140 profit whereas each wall unit £100.
 - i. Formulate the problem using L.P model and solve graphically (12mks)
 - ii. Mention any 3 applications of linear programming (L.P) (3mks)

Q2. a) i) state the process of Monte Carlo simulation. (4mks)

- ii. Explain the following as used in L.P using relevant examples:- Constraint, objective function, slack variable, optimization (4mks)

b) On average 10 customers reach a retail shop every hour. Determine the profitability that 4 customers reach the shop in 15 minutes assuming that arrival follows poisson distribution (10mks)

c) Explain the difference between deterministic and probabilistic queuing model (2mks)

Q3. Anyole hardware has 3 warehouses in Luanda, Yala and Bumala. The supply of timber to 4 sites namely Sio port, Busia, Kakamega and Bungoma is as illustrated below alongside demand supply and unit transport cost per Tone with regards to the different routes.

To site/ From warehouse	SITE				SUPPLY
	Sio port	Busia	Kakamega	Bungoma	
Luanda	10	2	20	11	15
Yala	12	7	9	20	25
Bumala	4	14	16	18	10
DEMAND	5	15	15	15	50

- i. Determine the routes that results to optimal transport cost using least cost method (15mks).
- ii. Use (i) to determine the minimum transport cost (5mks)

Q4. The cost matrix below relates to assignment of jobs by a supervisor to 4 machines operators to attain the least cost used on his past experience.

The supervisor is considering how he should assign four jobs to be performed by 4 operators. He wants to assign jobs to realize least costs operations. He has the information on time and cost, taken by the operators in performing the jobs.

MACHINE	OPERATORS			
	1	2	3	4
A	10	5	13	15
B	3	9	18	3
C	10	7	3	2
D	5	11	9	7

- i. Determine the optimal assignment to attain the least cost. (15mks)
- ii. Determine the cost of the assignment (5mks)

Q.5. A furniture manufacturing company intends to make 2 products chairs and tables from its available resources which consists of 400 board feet of mahogany timber and 450 man hours of labour. To make a chair it requires 5 feet and 10 machine hours to yield a profit of 45£ and to make a table requires 20 board feet and 15 man hours to make a profit of £80. Use simplex method to determine the numbers of chairs and tables required to maximize the profit. (20mks)