



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BUSINESS & ECONOMICS
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS
ADMINISTRATION WITH IT
4TH YEAR 1ST SEMESTER 2019/2020 ACADEMIC YEAR

COURSE CODE: ABA 402

COURSE TITLE: Tax Planning & Management

EXAM VENUE:

STREAM: (BBA-FINANCE OPTON)

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

- 1. Answer Question ONE (COMPULSORY) and ANY other 2 questions**
- 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.**

QUESTION ONE (30MARKS)- COMPULSORY

- (a) (i) What is a transportation problem? (1 mk)
 (ii) Highlight five steps of solving a transportation problem (5 marks)

(iii) A firm of wholesale of office equipment suppliers, with three warehouses, received orders for a total of 100 computers from 4 retail shops. In total, in the 3 warehouses there are 110 computers and the management wish to minimise transport costs by despatching the computers required from appropriate warehouses. Details of availabilities, requirements and transportation costs are given in the table below;

			Required				
			Shop A	Shop B	Shop C	Shop D	Total
Computers			25	25	42	8	100
Available	Warehouse I	40	\$3	16	9	2	Transport cost per computer
	Warehouse II	20	\$1	9	3	8	
	Warehouse III	50	\$4	5	2	5	
	Total	110					

It is required to make the most economic deliveries. Make up the initial tableau and make the initial feasible deliveries. (6marks)

- (b) (i) Define the term simulation (1mk)
 (ii) Highlight any three advantages of simulation model. (3 marks)

(c) Analysis of a firms performance shows that the sales are dependent on the advertisement (X_1) and the firms location (X_2). The general form is:

$$Y = a + b_1 X_1 + b_2 X_2$$

Calculations have produced the following values (where Y is firms performance)

$$Y = \$810 + 0.56X_1 + 0.07X_2$$

$$r^2_{x1} = 0.58 \quad r^2_{x2} = 0.14 \quad \text{and} \quad R^2 = 0.88$$

Required: Interpret these values. (4 marks)

(d) The following data relates to the sales revenue for five trading periods for Nakumatt Supermarket.

Period	1	2	3	4	5
Sales(\$ million)	50	200	450	800	1,250

It is established that the relationship between sales and trading period is non-linear (ie logarithmic function).

Required:

By taking x as the periods and y as the sales, linearise the exponential relationship and hence determine the non-linear regression equation in the form $y = ax^b$ (6 marks)

(e) Explain the following terms as used in solving Linear Programming model by Simplex algorithm:

- (i) Shadow prices (2mk)
- (ii) simplex multipliers (2 mks)

QUESTION TWO (20 MARKS)

(a) Explain the following terms as used in linear programming

- i. Slack variable (2mks)
- ii. Optimal solution (2mks)

(b) Unique Furniture manufactures chairs and Desks. If X_1 = no. of Chairs and X_2 = no. of Desks manufactured by the company, you are required to:

Maximize Profit, $P = 45X_1 + 80X_2$,
 Subject to: $5 X_1 + 20 X_2 \leq 400$;Timber
 $10 X_1 + 15 X_2 \leq 450$;Labour hours
 $X_1, X_2 \geq 0$.

Required:

- (i) Formulate a simplex problem (4 marks)
- (ii) Solve the simplex formulation up to two tableau (8 marks)
- (iii) Assume there was 25 extra feet of timber, do a sensitivity analysis to determine the effect on the solution. (4marks)

QUESTION THREE(20MARKS)

(a) Highlight the six steps for constructing a simulation model. (6 marks)

(b) Kenya power Western Region employs Transformer service engineers based at various locations through- out Western Kenya to service and repair their Power Transformer equipment installed in various locations. Four requests for service have been received and the company finds that four engineers are available. The distances each of the engineers is from the various locations is given in the table below

		Transformer Location				
		L1	L2	L3	L4	
Service Engineers	Alex	25	18	23	14	Distances in miles from engineers to customers
	Bob	38	15	53	23	
	Chris	15	17	41	30	
	Dan	26	28	36	29	

Required: Assign engineers to customers to minimize the distance to be traveled, hence compute the minimum distance to be traveled by the engineers. (14 marks)

QUESTION FOUR (20MARKS)

(a) Highlight the characteristics features that would provide sufficient information in designing a good queuing system (4 mks)

(b) UAP Insurance Company, Kisii branch sells life insurance policies using door-to-door salespersons. The management is interested in investigating the effect of additional salespersons on its sales. The following data for the past years is available.

Year	Number of sales persons	Number of Policies sold
	X	Y
2007	10	50
2008	15	70
2009	20	75
2010	25	75
2011	30	80
2012	35	110

Required:

(i) Explain the term ‘correlation’. (2 marks)

(ii) Plot the above data on a scatter diagram, and using your judgment, decide whether there is a correlation between Number of sales persons and Policies sold. (6 marks)

(ii) Calculate the product moment coefficient of correlation (r) for the above data and give interpretation. (8 marks)

QUESTION FIVE (20MARKS)

(a) Outline three objectives of a transportation problem (3 marks)

(b) A firm of wholesale of office Table suppliers, with three warehouses, received orders for a total of 15 Tables from 4 retail shops A,B,C and D. In total, in the 3 warehouses there are 15 Tables and the management wish to minimise transport costs by despatching the tables required from appropriate warehouses. Details of availabilities, requirements and transportation costs are given in the table below;

			Required				
Tables			Shop A	Shop B	Shop C	Shop D	Total
			3	3	4	5	15
Available	Warehouse I	2	\$13	11	15	20	Transport cost per unit
	Warehouse II	6	\$17	14	12	13	
	Warehouse III	7	\$18	18	15	12	
	Total	15					

It is required to make the most economic deliveries.

Required:

(i) Make up the initial tableau and make the initial feasible deliveries. (14 marks)

(ii) Hence, determine the minimal cost of the deliveries (3 mark)