JARAMOGI OGINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS AND ECONOMICS

UNIVERSITY EXAMINATION FOR DEGREE OF BUSINESS

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

EXAMINATION, DECEMBER 2018

BBM 3311 BUSINESS STATISTICS II

MAIN CAMPUS

COURSE CODE: BBM 3311

COURSE TITLE: BUSINESS STATISTICS II

EXAM VENUE: **STREAM (MBA)**

DATE: **EXAM SESSION:**

TIME: 2.00 HOURS

Instructions:

1.   **Answer Question ONE and any other TWO 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

a) Explain the following terms giving appropriate example in each case.

i) Dependent and Independent Events **(3 Marks)**

(ii) Seasonal variations **(2 Marks)**

(iii) Maximin principle **(3 Marks)**

b) Geminia Logistics Corporation after-tax cash inflows (ATCI) are time-dependent, so that year 1 results (ATCI$_1$) affect the flows in year 2 (ATCI$_2$) as follows. The cash flows associated with supply of a component for a major client are summarised as under:

If ATCI$_1$ is $8,000 with a 40 percent possibility, the distribution for ATCI$_2$ is:

0.3	$ 5,000
0.5	$ 10,000
0.2	$ 15,000

If ATCI$_1$ is $15,000 with a 50 percent probability, the distribution ATCI$_2$ is:

0.3	$ 10,000
0.6	$ 20,000
0.1	$ 30,000

If ATCI$_1$ is $20,000 with a 10 percent chance, the distribution ATCI$_2$ is:

0.1	$ 15,000
0.8	$ 40,000
0.1	$ 50,000

The project requires an initial investment of $20,000, and the risk-free rate of capital is 10%.

Required: Advice the company on the basis of expected NPV criteria and use of decision tree whether the project should accepted. **(12Marks)**

QUESTION TWO

(a) Explain four assumptions necessary to subject a supply chain problem to linear regression analysis. **(8Marks).**

(b) Nelisa Media Research collects data showing the number of households tuned in to shows that carry a particular advertisement. The information is useful because it tells them how many consumers they are reaching. The following information indicate the number of households exposures in millions and the number of times the ad was aired in a month.

Times advertisement aired(x)	House hold exposures(y)
49	359.6
42	296.1
30	271.6
26	251.1
31	229.3
20	186.9
21	186.3
24	172.7
15	166
19	162.1

Required:

(i). Use the data in the accompanying table to establish the least squares equation to be used to predict the number of household exposures given the number of times the ad is aired.

(8Marks).

ii) Determine number of household exposures given the 28 and 54 number of times the ad is aired.

(4Marks).

QUESTION THREE

a) Outline major assumptions of economic order quantity model   **(6Marks)**

b) The following data is available for one of A-class items:

Annual demand of 1000 units, Ordering costs = Kshs. 400, Holding costs = 40% of cost per unit and cost per unit = Ksh. 20. The following three strategies are available for the procurement:

1) Place for orders of equal size every year
2) Place the order for 500 units at a time and avail a discount of 10% on the cost of items.
3) Follow economic order quantity (EOQ).

Required:

Recommend with justification the best strategy to be adopted by procurement manage

(14 Marks)

QUESTION FOUR

The manager of Unga Nitro Company Ltd has provided the Pay-Off Table below on production levels and expected demand for component TZ-24.

Production Units	Demand Levels		
	100 Units	80 Units	200 Units
200	400	240	400
160	280	320	80
400	0	-160	800

Use the pay-off matrix to compute the optimal decision using each of the principles below:

i)   Maximax   **(3Marks)**
ii) Laplace   **(3Marks)**
iii) Hurwitz (α=0.3)   **(4Marks)**
iv) (iv) EMV given that the respective demand levels have 0.25, 0.4 and 0.35 probabilities of occurrence.   **(4Marks)**

(iv) Explain three important roles of inventories in a manufacturing concern.

(6 Marks)

QUESTON FIVE

a) The sales of a particular company for the last 8 years of operation are given in the table below:

Year	1	2	3	4	5	6	7	8
Sales (Kshs.)	96	112	120	125	140	145	153	156

The Brand manager is interested in establishing the demand pattern in year nine using exponential smoothing technique at α = 0.4 and initial forecast of 108. Determine the demand level in year nine**.**   **(16 Marks)**

b) Outline four assumptions of a Ch-square distribution   **(4 Marks)**