JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BUSINESS AND ECONOMICS

UNIVERSITY EXAMINATION FOR BACHELOR OF BUSINESS ADMINISTRATION WITH IT THIRD YEAR SEMESTER TWO FOR 2018/2019 ACADEMIC YEAR

MAIN CAMPUS (EVENING)

UNIT CODE: ABA 314

UNIT NAME: ABA 315: QUANTITATIVE METHODS I

EXAM SESSION: **STREAM: BBA (With IT)**

EXAM DATE: **EXAM VENUE:**

DURATION: 2 HOURS

INSTRUCTIONS

Answer QUESTION ONE and any other TWO QUESTIONS

QUESTION ONE

a) Differentiate the following terms as used in network analysis

i) Pessimistic time and optimistic time **(2Marks)**

(ii) An event and activity **(2Marks)**

(iii) Dummy activities and Critical activities **(2Marks)**

b) The sales of a detergent of company ABC Ltd for the last 7 years of operation are given in the table below:

Year	1	2	3	4	5	6	7
Sales (Kshs.)	144	174	179	190	220	215	230

The Brand manager is interested in establishing the demand pattern in year eight using a smoothing constant of 0.3 and an initial forecast of 150**.**

Required:

i) The forecast in the 8^{th} year **(14 marks)**
ii) MAPE **(4 marks)**

c) Explain any three factors that may affect the forecasts in **(b)** above relevant to enterprise success**.** **(6Marks)**

QUESTION TWO

(a) Outline four distinguishable features between **PERT** and **CPM** **(6 Marks)**

(b) The owner of a chain of Fast –Food Restaurant is considering a new computer system for accounting and inventory control. A computer Company sent the following information about the system installation.

Activity	Preceding Activity	Duration (Weeks)
A	-	6
B	-	9
C	A	9
D	B,C	3
E	B,C	12
F	D	6
G	E,F	3

REQUIRED:

Network diagram for the project, hence project critical path. **(8Marks).**

i. Total float **(3Marks).**
ii. Free float **(3Marks).**

QUESTION THREE

In respect of a component costingKsh.10 each, the annual demand is known to be 24,000 units. The cost of placing an order is Kshs.1000 and the total holding costs is 24% of unit cost. However, the supplier offers a discount of 7.5% for an order 0f at least 3000 units and a discount of 12.5% if an order is for at least 5,000 units. Find the most economic purchase quantity per order.

Required:

i) The most economic order size **(12 Marks)**

ii) Explain four merits of a JIT system in a Kenyan business entity. **(8Marks)**

QUESTION FOUR

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

PRODUCTION UNITS	**DEMAND LEVELS**		
	350 Tones	**280 Tones**	**700 Tones**
700	1,400	840	1,400
560	980	1,120	280
1,400	0	-560	2,800

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

i) Minimax **(3Marks)**

(ii) Laplace **(3Marks)**

(iii) Hurwitz (α= 0.2) **(4Marks)**

(iv) EOL given that the respective demand levels have 0.3, 0.25 and 0.45 Probabilities of occurrence. **(6 Marks)**

(iv). Explain three important roles of inventories in a manufacturing concern. **(4Marks)**

QUESTON FIVE

a) Explain four limitations of economic order quantity model **(8Marks)**

b) A firm has an opportunity to invest in a machine which will last 2 years, initially cost $130,000 and has the following estimated possible after-tax cash inflow pattern: In year 1, there is a 25 percent chance that the after-tax cash flow will be $40,000, a 45 percent chance that it will be $80,000, and a 30 percent chance that it will be $90,000. In year 2, the after-tax cash inflow possibilities depend on the cash inflow that occurs in year 1; that is, the year 2 after-tax cash inflows are conditional probabilities. Assume that the firm's after-tax cost of capital is 10% percent. The estimated conditional after-tax cash inflows (ATCI) and probabilities are given below:-

If $ATCI_1$ = $45,000		**If $ATCI_1$ = $65,000**		**If $ATCI_1$ = $90,000**	
$ATCI_2$ ($)	**Probability**	**$ATCI_2$ ($)**	**Probability**	**$ATCI_2$ ($)**	**Probability**
40,000	0.3	70,000	0.2	95,000	0.2
60,000	0.4	80,000	0.6	105,000	0.7
80,000	0.3	95,000	0.2	120,000	0.1

(12Marks)