MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year
SCHOOL OF BUSINESS AND ECONOMICS
DEPARTMENT OF ACCOUNTING, BANKING AND FINANCE
FIRST YEAR FIRST SEMESTER EXAMINATION FOR
DIPLOMA IN ACCOUNTANCY
QUANTITATIVE METHODS

DATE: 15/11/2019   **TIME: 8.30-11.30 AM**

INSTRUCTIONS:

Attempt any 5 Questions

1   The unit price and cost functions associated with the production and sale of a certain electric component are given by the following equations:

   P   =   1005q

        and

   TC   = $q^2 + 4q + 300$ (in thousands of shillings)

   Where :

   P is the unit price of the electric component.

   Q is the number of electric component produced and sold.

   TC is the total cost.

   Required:

   i.   The number of electric components that would maximize profit.

   ii.   The maximum profit.

   iii.   The maximum total revenue.   (20 marks)

2   a)   Mwanaisha Ali sells tree seedling at Mavuno market. A random sample of 9 of the seedlings had the following height in centimetres:

        64   62   65   63   68   69   63   65

   Required:

   A95 per cent confidence interval of the population mean heigh of the seedlings (10 marks)

---

b) Explain the difference between the following sets of terms as used in hypothesis and estimation:

    i. "Type I error" and "type II error"

    ii. "One tailed test" and "Two tailed test"   (10 marks)

3 a) Faida Limited deals in the manufacture and sale of a product named "Big". The company sells the product in two of its distribution outlets, A and B

The data below relates to a random survey of monthly mean sales of the product in the two outlets:

Outlet	Monthly mean sales	Standard deviation	Sale size
A	795	50	200
B	810	70	175

Required:

Test at a 5 per cent level of significance whether there is a significant different in the monthly mean sales of the two outlets   (20 marks)

4 The following information relates to a certain construction project:

Activity	Preceding activity	Time estimates (weeks)
A	-	12
B	-	26
C	A	10
D	A	20
E	A	11
F	B,C	9
G	D	7
H	E,F,G	5

Required:

    i. The network diagram for the project.

    ii. The critical path.   (20 marks)

5. Juma is considering investing in one of the investments; X,Y and Z. the returns on the investments will depend on the prevailing business conditions; good, moderate or poor. The estimated probabilities of the good, moderate and poor conditions are 0.3, 0.5 and 0.2 respectively.

The following are the expected returns of the investment in thousands of shilling.

Investment	Good	Moderate	Poor
X	1,400	1,000	(500)
Y	1,500	1,300	(800)
Z	1,200	1,100	300

i.   Draw a decision tree from the information above.

ii. Advise Juma on the investment to choose, based on the result in (i) above   (20 marks)

6.   Nairaa Limited intend to invest in either project A or Project B. The following estimates relate to the projects

		Project A (Ksh)	Project B (ksh)
	Cash outlay	8,000,000	8,200,000
Expected cash inflow	Year		
	1	2,000,000	4,000,000
	2	3,000,000	3,000,000
	3	4,500,000	3,000,000
	4	2,500,000	2,000,000
	5	2,000,000	2,000,000

The company's cost of capital is 12%.

i)   For each project determine 'the:

   I.   Net present value (NPV)

   II. Propability Index (IP)

ii) Advice the management on the prject to invest in, based on the probability index (20 marks)

7.   The following information shows different output levels and the corresponding production cost incurred by Jumla Manufucturers.

Output (x)	Production cost (y)
(000's of unit)	(Ksh 000's)
20	170
30	230
50	260
70	340
110	460
140	530

Determine the:

i)   Regression line, y=a+bx, using least square method.

ii) Total production cost, if the output is 120,000 units.   (20 marks)