

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2018/2019**

**YEAR II SEMESTER II EXAMINATION FOR THE DEGREE OF BACHELOR OF PROCUREMENT AND CONTRACT MANAGEMENT**

**HPS 2210/HBC 2205: QUANTITIVE METHODS II**

**DATE: AUGUST 2019 TIME: 2 HOURS**

**INSRUCTIONS: Answer question one and any other two questions.**

QUESTION ONE

a. What do you understand from the term ‘demand function. (2 marks)

b. State and explain the purposes of an input/output matrix analysis. (8 marks)

c. Find the coefficient of correlation between the use of fertilizers and productivity from the following figures. (2 marks)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fertilizers used (tonnes) | 15 | 18 | 20 | 24 | 30 | 35 | 40 | 45 |
| Productivity of land (tonnes) | 85 | 93 | 95 | 105 | 120 | 130 | 150 | 160 |

d. Discuss four main components or elements of time series. (8 marks)

QUESTION TWO

a. Briefly stare and explain three types of probability laws. (6 marks)

b. A post graduate applies for a job in two firms x and y. The probability of his being selected in firm x is 0.7, and being rejected in y is 0.5. The probability of at least of his applications being rejected is 0.6. What is the probability that he will be selected in one of the firms? (4 marks)

QUESTION THREE

a. Give the following demand equation,

 P=128- (1.2g), find out:

 i. Total revenue function. (2 marks)

 ii. Average revenue function. (2 marks)

 iii. Marginal revenue. (2 marks)

b. Solve the following simultaneous equation using the matrix method.

 4x+3y-z=25

 4x-x+y=20

 3x-2y-z=15 (14 marks)

QUESTION FOUR

In the following table are recorded data showing the test scores made by salesmen on an intelligence test and their weakly sales.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Salesmen | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Test score | 40 | 70 | 50 | 60 | 80 | 50 | 90 | 40 | 60 | 60 |
| Sales (000 shs) | 25 | 60 | 4.0 | 5.0 | 4.0 | 2.5 | 5.5 | 3.0 | 4.5 | 3.0 |

Calculate the regression line of sales on test scores and estimate the probable weekly sales volume if a salesmen makes a score of 100. (20 marks)

QUESTION FIVE

a. Differentiate between level of significance and confidence level in hypothesis testing.

 (6 marks)

b. A random sample of 625 spanners is weighed and it is found that the mean weight is 150 grams with a standard deviation of 30 grams.

 i. What is the estimate of the population mean and what is the stand error of the mean? (10 marks)

 ii. What would be the standard error if the sample size was 1225. (4 marks)