SCHOOL OF PROFESSIONAL STUDIES

DIPLOMA IN AGRIBUSINESS

UNIT CODE: DAG 103, UNIT NAME: BUSINESS MATHEMATICS

September – December 2018/2019 End Semester Exam - Time: 2 Hours

Instructions: Answer Question ONE (Compulsory) and any other TWO questions

Question 1.

Mathematics is defined as a study of numbers, shapes, arrangements, relationships as well as reasoning.

i. Compare and contrast using illustration ;

a. Finite and infinite set { 4 marks}

b. Summation and factorial notation { 4 marks}

c. Sum and difference { 4 marks}

d. Quotient and product { 4 marks}

e. Power and exponent { 4 marks}

ii. Find the solution set of natural numbers for each of the following;

a. $19x - 2 \leq 61$ { 2 marks}

b. $34x - 10 < 30$ { 2 marks}

c. $3\sqrt{27} + 2x < 11$ { 2 marks}

d. $x^3 + 7 \leq 31$ { 2 marks}

e. $8x - \sqrt{16} \leq 12$ { 2 marks}

Question 2.

You are required to solve the following problems as per the given instructions

a. With illustration explain at least three properties of rational numbers { 3 marks}

b. Explain with examples at least four arithmetic operations { 4 marks}

c. Briefly discuss the two types of sets giving illustrations {4 marks}

d. All integers are rational numbers, explain for or against this statement {4 marks}

Question 3.

i. Explain the following terms as used in Mathematics.

a. Fundamental counting principle { 2 marks}

b. Probability { 2 marks}

c. Common logarithmic function { 2 marks}

ii. Solve for x in the following

a. $\log_2 {}^{x} = \log_2 3$ { 2 marks}

b. $\log_5 5 = x$ { 2 marks}

iii. Use the function $f(x) = 2^x$ to contract a table and sketch the graph for X equal to -2, -1, 0,1,2,3 values. {5 marks}

Question 4.

i. Clearly differentiate between permutation and combination with illustrations { 4 marks}

ii. In how many ways can the letters in the SUCCESS be written;

a. Order being not important { 2 marks}

b. Order being important { 2 marks}

c. Compare and contrast the answers in a and b above { 2 marks}

iii. In Shabiki dot.com betting game, a player chooses six different numbers from 1 to 41. If these six numbers match the six numbers drawn at the winning draw, the player wins the top prize. Determine the probability of winning. { 5 marks}

Question 5.

In terms of mathematical measurement, there are two broad classifications of numerical measures, measures of central tendency and measures of dispersion.

i. Difference between measures of central tendency and measures of dispersion {6 marks}

ii. While preparing for a car race, Mr. Whiteman did several time trials.

The following are sample times taken (in seconds) to complete the laps:

50	48	49	46	54	53	52	51	47	56	52	51
51	53	50	49	48	54	53	51	52	54	54	53
55	48	51	50	52	49	51	53	55	54	50	

a. Tabulate the frequency distribution of the raw data above { 4 marks}

b. Determine the mean, mode and media in during the trials { 5 marks}