NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI, ABUJA
FACULTY OF MANAGEMENT SCIENCES
2020_1 EXAMINATION

COURSE CODE: BUS729   **CREDIT UNIT: 2**
COURSE TITLE: Business Mathematics
TIME ALLOWED: 2hrs
INSTRUCTIONS: 1. Attempt question number one (1) and any other (2) questions.
                              2. Question number 1 carries 30 marks, while the other two (2)
                                 questions carry 20 marks each.
                              3. Present all your points in coherent and orderly manner.

1a. Assume that you are receiving N1,000 every year for the next five years, and you invested each payment at 5%. Calculate the future value of the annuity at the end of the five-year period.

                                                                                     10Marks

1b. Discuss several distinctive features of variable annuities.   **10Marks**

1c. Let A = {1,2,3,4}, B = {2,4,6,8} and C = {3,4,5,6}.

Find (i) (A∪B)∪C, (ii) A∪(B∪C).   **10Marks**

2a. Discuss the following;

i. Immediate Annuities   **2Marks**

ii. Deferred Annuities   **2Marks**

iii. Fixed Annuities   **2Marks**

iv. Variable Annuities   **2Marks**

v. Ordinary Annuity   **2Marks**

2b. Suppose you invest N2000 at an annual interest rate of 6%. Find your balance at the end of 1st year if interest is compounded ;(i) Yearly (ii) Semiannually (iii) Quarterly (iv)Monthly

                                                                                     10Marks

3a. Enumerate how cash flow can be classified with operating, investing and financial flow.

10marks

3b. A wholesaler stocks heavy (2B), medium (HB), fine (2H) and extra fine (3H) pencils which come in packs of 10. Currently in stock are 2 packs of 3H, 14 packs of 2H, 35 packs of HB and 8 packs of 2B. If a pack of pencil is chosen at random for inspection, what is the probability that they are:

(i) medium (ii) heavy (iii) not very fine (iv) neither heavy nor medium?   **10Marks**

4a. Write notes with examples on the followings

i. Equality of Sets   **2Marks**

ii. Sub-Sets   **2Marks**

iii. Disjoint Sets   **2Marks**

iv. Universal Set   **2Marks**

v. Null Set   **2Marks**

4b. State, with simple examples, the four laws of probability.   **10Marks**

5a. Identify and discuss five assumptions of linear programming.   **10Marks**

5bi. The present value of a 5year annuity with nominal annual interest rate 12% and monthly payments of N100 is: **5Marks**

ii. The final value of a 7year annuity-due with nominal annual interest rate 9% and monthly payments of N100:   **5Marks**