



**NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI, ABUJA
FACULTY OF MANAGEMENT SCIENCES
JANUARY 2018 EXAMINATION QUESTIONS**

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. Define Cash flows

7marks

1b. A company wishes to spend #40000 for new equipment and decides to set up a sinking fund to accumulate this money over a 3 year period. If payments are to be made to the fund quarterly, with interest compounded quarterly at an annual rate of 5%, how large should the payments be?

11marks

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

(i) $A \cup B$ **3marks**

(ii) $A \cup C$ **3marks**

(iii) $B \cup C$ **3marks**

(iv) $B \cup B$ **3marks**

2a). Discuss Simple and Compound Interest **10marks**

2b.) Suppose you invest #2000 at an annual interest rate of 6%. Find your balance at the end of 1st year if interest is compounded; a) Yearly b) Semiannually c) Quarterly d) Monthly

10marks

3a. Define the following with example

(i) Rational Numbers **3marks**

(ii) Natural Numbers **3marks**

(iii) Prime Numbers **3marks**

(iv) Decimals and Real Numbers **3marks**

(v) Absolute Value **3marks**

3 b. State the basic principles of matrix or algebra **5marks**

4. The purchasing department of a big company has analysed the number of orders placed by each of the 5 departments in the company by type as follows: **20marks**

Departmental Orders

Type of Order	Department					Total
	Sales	Purchasing	Production	Accounts	Maintenance	
Consumables	10	12	4	8	4	38
Equipment	1	3	9	1	1	15
Special	0	0	4	1	2	7
Total	11	15	17	10	7	60

An error has been found in one of these orders. What is the probability that the incorrect order:

- a) came from maintenance?
- b) came from production?
- c) came from maintenance or production?
- d) came from neither maintenance nor production?

5a. Explain the requirements for Linear Programming **10marks**

5b). Discuss the following;

i. Coupon Rate **4marks**

ii. Zero Coupon Bonds **4marks**

iii. Floating Rate Bonds **2marks**