**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∪B **3marks**

(ii) A∪C **3marks**

(iii) B∪C **3marks**

(iv) B∪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 | | | | | |
|---|---|---|---|---|---|---|
| | Sales | Purchasing | Production | Accounts | Maintenance | Total |
| 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**