



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKWE EXPRESS**  
**WAY, JABI - ABUJA**  
**FACULTY OF MANAGEMENT SCIENCES**  
**DEPARTMENT OF ADMINISTRATION**  
**OCTOBER/NOVEMBER EXAMINATION 2016**

**COURSE CODE: MGS 729**

**COURSE TITLE: Business Mathematics**

**CREDIT UNIT: 2**

**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.**

1. Greene Co. shows the following information in its 2012 income statement: Sales =  
#138,000, Costs = #71,500, Other expenses = #4,100

Depreciation expense = #10,100, Interest expense #7,900, Taxes = #17,760

Dividends = #5,400.

In addition, you're told that the firm issued #2,500 in new equity during 2012,  
and redeemed #3,800 in outstanding long-term debt

- What is the 2012 operating cash flow? **10marks**
- What is the 2012 cash flow to creditors? **5marks**
- What is the 2012 cash flow to stockholders? **5marks**
- If net fixed assets increased by #17,400 during the year, what was the addition to NWC? **10marks**

2a. Discuss Simple and Compound Interest

**10marks**

b. Suppose you invest #2000 at an annual interest rate of 6%. Find your balance at the end of 1<sup>st</sup> 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**

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**

b. Suppose the prices in N per unit for products A,B, and C are represented by the price matrix:

$$P = \begin{matrix} & \begin{matrix} \text{Price of} \\ \text{A} & \text{B} & \text{C} \end{matrix} \\ \begin{matrix} 2 & 3 & 4 \end{matrix} & \end{matrix}$$

(1x3)

The quantities purchased are given by the quantity matrix:

$$Q = \begin{matrix} & \begin{bmatrix} 7 \\ 5 \\ 11 \end{bmatrix} \\ \begin{matrix} \text{units of A} \\ \text{units of B} \\ \text{units of C} \end{matrix} & \end{matrix}$$

(3 X 1)

Compute the total expenditure on the products.

**10marks**