



NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF MANAGEMENT SCIENCES
MAY/JUNE 2012 EXAMINATION

MBF/MBA716/816: BASIC MATHEMATICS AND STATISTICS FOR MANAGERS

Instruction: Attempt any three (3) questions of your choice. Each question carries 23.3 marks

1. The following are two possible areas of statistical investigation. However, the two statements are rather vague:

- (a) I wonder how accurate the radar guns the police uses in *speed traps*
- (b) There seems to be too many people in the Nigerian Prisons.

Rewrite each statement more precisely so that a statistical investigation can be carried out.

2. A Ship travels between two ports. The cost of fuel is $100(ax + b/x + 10)$ naira, where x is the average speed of the Ship in knots, and a and b are constants. If the Ship travels at 4 knots, the cost of fuel would be N9,000, but at 6 knots, the cost would be N7,000.

- (a) Find the values of a and b
- (b) What is the cost of fuel at an average speed of 5 knots?

3. The followings are data on annual gross revenue of a Company:

Year	t	Gross Revenue (N'millions) (y)	ty	t ²
1987	1	13.0	13	1
1988	2	14.1	28.2	4
1989	3	15.7	47.1	9
1990	4	17.0	68	16

1991	5	18.4	92	25
1992	6	20.9	125.4	36
1993	7	23.5	164.5	49
1994	8	26.2	209.6	64
1995	9	29.0	261	81
1996	10	32.8	328	100
$\Sigma t = 55$		$\Sigma y = 210.6$	$\Sigma ty = 1336.8$	$\Sigma t^2 = 385$

- (a) Sketch the data on your answer script
 (b) Compute the regression equation, using y as dependent variable and t as independent variable.
 (c) Find the trend forecasts for the years 1999, 2001, 2004, and 2006

- 4(a) The annual income of a bank clerk is N240,000. His income tax is charged at 10 percent, and the employer deducts 5 percent for the Pension fund. Calculate the clerk's net monthly income.
 (b) Using the expression for the n th term of a geometric progression, compute the 8th term of the geometric progression: 72, -24, 8, ...

5. Given the income distribution of a sample of 50 MTN customers as follows:

Income (N'000s)	Number of Subscriber
20 - 30	20
31 - 41	15
42 - 52	10
53 - 63	5

- (a) Compute the arithmetic mean of the incomes;
 (b) Compute the Median income