NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF MANAGEMENT SCIENCES

COURSE CODE: **MBA816**   **CREDIT UNIT: 2**
COURSE TITLE: **BASIC MATHEMATICS AND STATISTICS FOR MANAGERS**
TIME ALLOWED: **2 hrs**
Instructions: **1. Attempt question Number one (1) and any other two (2).**

2. Question number 1 is compulsory and carries 30 marks, while the other questions carry equal marks each
3. Present all your points in coherent and orderly manner

1 (a) If it can take 10 days for five workers to complete a job, how long will it take 8 workers to complete the same job?

(b) Discuss in detail the various techniques of statistical sampling. What are the various techniques used in data collection?
(30 marks)
2. The followings are data on annual gross revenue of a Company:

Year	t	Gross Revenue (N'millIons) (R)	tR	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
$\Sigma t = 55$		$\Sigma R = 210.6$	$\Sigma tR = 1336.8$	$\Sigma t^2 = 385$

(a) Sketch the data on your answer script
(b) Compute the regression equation, using R as dependent variable and t as independent variable.
(c) Find the trend forecasts for the years 1999, 2001, 2010, 2013 and 2014
(20 marks)
3(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 nth term of a geometric progression, compute the 8th term of the geometric progression: 72, -24, 8, ...   **(20 marks)**

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

Income   Number of
(N'000s)   Subscriber

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   **(20 marks)**

5. XYZ Company produces product A for which cost (including labour and material) is N6/unit. Fixed cost are N80,000. Each unit is sold for N10. Determine the number of units which must be sold for the company to earn a profit of N60,000.
(20 marks)