



**NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
MARCH/APRIL 2015 EXAMINATION**

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: MTH 308
COURSE TITLE: INTRODUCTION TO MATHEMATICAL MODELLING
TOTAL: 70 MARKS
TIME: 3 HOURS
CREDIT UNIT: 3

INSTRUCTION: ANSWER ANY 4 QUESTIONS

1. (a) Explain the interpretation of solution of a model

5 marks

(b) State the three equations of motion

6 marks

(c) A rain drop beginning at rest, falls from a cloud 705.6m above the ground. How long does it take to reach the ground

6 ½ marks

2. (a) By using Newton's law formulate a model for motion of a simple pendulum

10 marks

(b) State the three interpretations of solution obtained for different formulations of the model of a simple pendulum

6 marks

3. (a) What is mathematical modelling

6 marks

(a) Which types of modelling will you use for the launching of a rocket for meteorological purpose **6 ½ marks**

(b) Classify the following into fundamental or derived quantities
velocity, amount of substance, speed, acceleration, force, time, work-done, power, temperature and mass **5 marks**

4. (a) Explain the three essential steps you will follow to model a problem

12 marks

(b) Formulate an equilibrium equation for demand and supply of a commodity
5 ½ marks

5. (a) What is dimension of a quantity

5 marks

(b) State 4 rules for theoretical relationship between two or more variables of a dimensional quantity **8 marks**

(c) State dimensional formula for acceleration
4 ½ marks

6. (a) Explain the two basic mathematical modelling

10 marks

(b) Mention 5 types of modelling
5 marks

(c) How would you model speed
2 ½ marks

