NATIONAL OPEN UNIVERSITY OF NIGERIA

14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
MARCH/APRIL 2014 EXAMINATION

COURSE CODE: MTH 308

COURSE TITLE: INTRODUCTION TO MATHEMATICAL MODELLING
TIME ALLOWED: 3 HOURS
INSTRUCTION: ANSWER ANY 4 QUESTIONS

1. (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)

2. (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)

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 subtance , speed ,acceleration,force, ,time ,work-done,power, temperature and mass **(5 marks)**

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

(12 marks)

(b) Formulate an equlibrium equation for demand and supply of a commodty

(5 ½ marks)

5. (a) By using Newton’s law formulate a model for motion of a simple pendulum **(10 marks)**

(b) State the three interpretation of solution obtained for different formulation of the model of a simple pendulum **(6 marks)**

6. (a) Explain the interpretation of solution of a model **(5 marks)**

(b) State the three equtions of motion **(6 marks)**

(c) A rain drop begining at rest ,falls fom a cloud 705.6m above the ground .How long does it takes to reach the ground **(61/2marks)**