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

MTH 308 INTRODUCTION TO MATHEMATICAL MODELLING(3 CR)
TIME ALLOWED: 3HRS

INSTRUCTION: ANSWER ANY 5 QUESTIONS

1.(a) Explain the mathematical modelling -**4 marks**

(b) Explain the steps involve in mathematical modelling-**10 marks**

2.(a) Explain the two basic mathematical modelling -**5 marks**

(b) Mention 3 types of modelling and explain each -**9 marks**

3.(a) Which types of modelling will you use for the launching of a rocket / satellite for meteorological purpose ?-**4 marks**

(b) How would you made (i) velocity

(ii) acceleration

(iii) Momentum-**8 marks**

4.(a) Classify the following into fundamental or derived quantities

velocity ,acceleration,force,work-done,power, speed,time,temperature,amount of subtance,mass**-5 marks**

(b) State four rules of dimension which validate any equation that state the general or theoretical relationship between two or more variable -**9 marks**

5.(a) Explain the essential steps you will follow to a model a problem -**6 marks**

(b) A rain drop begining at rest ,falls fom a cloud 705.6m above the ground .How long does it takes to reach the ground-**8 marks**

6.(a) Formulate the dynamic stability of market equilibrium.-**8 marks**

(b) Find T_0 if $\theta_0 = 20^0$,given that $l = 20\,cm$ and $g = 980\,cm\backslash\sec^2$ -**6 marks**

7.(a) Discuss the solution obtained for the phytoplankton growth problem -**7 marks**

(b) Interpret the solution obtained for different formulation of the model of a simple pendulum -**7 marks**