NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF MANAGEMENT SCIENCES
JANUARY/FEBRUARY 2013 EXAMINATION

CODE: MTH 308 **TIME: 3 HOURS**
TITLE: INTRODUCTION TO MATHEMATICAL MODELLING
TOTAL: 70 MARKS
CREDIT UNIT: 3
INSTRUCTION: ANSWER ANY 5 QUESTIONS

1. (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 9marks

2. (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**

3. (a) Explain the mathematical modelling -4 marks
(b) Explain the steps involve in mathematical modelling-10 marks

4. (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

5. (a) Explain the two basic mathematical modelling -5 marks
(b) Mention 3 types of modelling and explain each -9 marks

6.(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

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