



**NATIONAL OPEN UNIVERSITY OF NIGERIA  
14-16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS  
SCHOOL OF SCIENCE AND TECHNOLOGY  
JANUARY/FEBRUARY 2013 EXAMINATION**

**COURSE CODE: CIT 412**

**COURSE TITLE: MODELLING AND SIMULATION**

**CREDIT UNIT: 3 CREDIT UNITS**

**TIME: 3 HOURS**

**INSTRUCTION: ANSWER ANY FOUR QUESTIONS IN ALL**

1a. Discuss Poisson Process. [7<sup>1</sup>/<sub>2</sub> marks]

1b. Enumerate seven (7) Application areas of Monte Carlo Methods. [10 marks]

2a. Explain Queuing theory with practical examples. [10 marks]

2b. List six (6) factors of evaluating a model. [7<sup>1</sup>/<sub>2</sub> marks]

3a. Highlight three (3) Advantages of using Model. [10<sup>1</sup>/<sub>2</sub> marks]

3b. Using Mixed Congruential formula, suppose  $m = 8$ ,  $a = 5$ ,  $c = 7$  and  $X_0$  (seed) = 4, generate a random sequence of integer numbers in a tabular form. [7 marks]

4a. Explain in detail the queuing disciplines and its four (4) methods/disciplines. [10 marks]

4b. Briefly explain what is meant by a Model. [7<sup>1</sup>/<sub>2</sub> marks]

5a. Differentiate between Physical and Mathematical Models. [10 marks]

5b. What is a Random Number? [7½ marks]

6a. Enumerate any five (5) properties of a good Random number generator. [7½ marks]

6b. Write six (6) purpose of simulation language? [10 marks]

13021110  
22