NATIONAL OPEN UNVERSITY OF NIGERIA
University Village, Plot 91, Cadastral Zone,
Nnamdi Azikiwe Expressway, Jabi, Abuja

FACULTY OF SCIENCES
2021 EXAMINATIONS

Course Code: CIT412
Course Title: Modelling and Simulation
Time Allowed: 2.5 Hours
Credits **3**
Instruction: Answer Question one(1) (22 marks) and any other FOUR(4) Questions.

Questions

1) (a) Describe the following terms: (i) Activity (ii) System (iii) Simulation (iv) Delay (v) Model **(5marks)**

b) Differentiate between analytical models and numerical models **(3marks)**

c) Define congestion in a queuing system, and identify its major characteristics.
Congestion = **(3marks)**
Characteristics = **(2marks)**

d) Explain the properties of random numbers **(6marks)**

e). Discuss Bayesian inference **(3marks)**

2) (a) Clarify on Time series input model **(4marks)**

(b) Explain the steps in simulation study **(5marks)**

(c) Outline inventory system **(3marks)**

3) (a) Differentiate between terminating and non-terminating simulation **(5marks)**

3(b) Distinguish between endogenous and exogenous event **(3 marks)**

3(c) Separate between random numbers and random variates **(4 marks)**

4) (a) What do you understand by model verification and validation? **(3marks)**

(b) Articulate briefly the various method of validating input model **(6marks)**

4c) What are the general procedure for constructing and analyzing queuing models? **(3marks)**

5) (a) Transcribe a short on *Cobweb model* **(4marks)**

(b) Converse the process of the *Selection of simulation software* **(5marks)**

5c) Conscript five Modelling Procedure **(3 marks)**

6)(a) Delineate *Manufacturing system simulation* **(4marks)**

(b) Briefly designate the following concepts:

i) Trace-driven simulation **(2marks)**

ii) Empirical distributions **(3marks)**

(c) what is all about fitting (theoretical) distributions? **(3marks)**