

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE  
OF BACHELOR OF COMMERCE

BCOM 467: SIMULATION FOR OPERATIONS MANAGEMENT

STREAMS: BCOM (Y4S1)

TIME: 2 HOURS

DAY/DATE: TUESDAY 06/04/2021

2.30 P.M. – 4.30 P.M.

**INSTRUCTIONS: Answer question ONE and any other TWO questions**

**QUESTION ONE (COMPULSORY)**

- (a) Discuss the view that ‘Simulation in Operations management have been used for decision support at the strategic level of the organization compared to the tactical level of the organization’. In your discussion, highlight the key areas of simulation application in operations management. [8 marks]
- (b) Explain the distinguishing features between operational level simulation models and strategic level simulation models [6 marks]
- (c) Explain the need for each of the following simulation types: [8 marks]
- (i) Monte Carlo simulation
  - (ii) Agent based simulation modeling
  - (iii) Discrete event simulation
  - (iv) System Dynamics simulation
- (d) Explain a simulation experiment for a production scheduling problem [8 marks]

**QUESTION TWO**

- (a) Simulation is the “precursor” of Business Process Re-engineering”. Justify this statement by explaining the important role played by simulation in re-engineering organizations today. [8 marks]

- (b) Simulation models can either be steady state or dynamic, deterministic or probabilistic, transparent or “black box”, physical system, a management system or a Meta model.

Discuss [12 marks]

**QUESTION THREE**

- (a) Compare and contrast the basic process mapping software and simulation software, highlighting the key features of each [10 marks]

- (b) In an operation, explain the basic simulation modeling considerations [10 marks]

**QUESTION FOUR**

- (a) Discuss the THREE elements of Agent-Based Simulation Modeling [6 marks]

- (b) Explain the main characteristics of agents in the Agent-Based Simulation Model [8 marks]

- (c) Explain how Agent-Based Models are used in Operations Management [6 marks]

**QUESTION FIVE**

- (a) Explain how simulation modeling is used in operations planning [10 marks]

- (b) Discuss using an illustration how operations planning simulation is carried out [10 marks]

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