

**UNIVERSITI KUALA LUMPUR  
MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY**

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**FINAL EXAMINATION  
JANUARY 2016 SEMESTER**

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**COURSE CODE : JLB 30102**  
**COURSE TITLE : MODELLING AND SIMULATION**  
**PROGRAMME LEVEL : BACHELOR**  
**DATE : 31 MAY 2016**  
**TIME : 9.00 AM – 11.00 AM**  
**DURATION : 2 HOURS**

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**INSTRUCTIONS TO CANDIDATES**

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1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. This question paper consists of **TWO (2)** sections.
4. Answer **ALL** questions in Section A. Choose **THREE (3)** questions in section B.
5. Please write your answers on the answer booklet provided.
6. Please answer all questions in English only.

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**THERE ARE 4 PAGES OF QUESTIONS EXCLUDING THIS PAGE.**

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**SECTION A (Total: 40 marks)****INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided****Question 1**

Simulation are methods and applications to imitate or mimic real systems, usually via computer. This method applies in many fields and industries such as manufacturing, logistics, plantation and other fields.

- (a) Explain briefly, the main mission in the logistics business. Give **THREE (3)** conditions that appropriate to use simulation by an organization.

(10 marks)

- (b) Explain what is represented by the model of simulation in logistics.

(4 marks)

- (c) Briefly explain **THREE (3)** uses of simulation model in shipping analysis and optimization.

(6 marks)

**Question 2**

In the logistics business, decisions that are made by a logistics officer is very important to ensure the business running smoothly. Logistics officers must consider a variety of issues in designing of logistics and supply chain model.

- (a) Give **TWO (2)** questions that need to be considered based on strategic, tactical and operations for transportation management. Explain briefly for each question.

(12 marks)

- (b) Determine the fundamental characteristics of logistics by decision-making. Briefly explain **FOUR (4)** characteristics.

(8 marks)

**SECTION B (Total: 60 marks)****INSTRUCTION: Choose THREE (3) questions only****Please use the answer booklet provided****Question 1**

- (a) Explain the transportation mode selection in logistics strategies and design the appropriate modeling illustration.

(10 marks)

- (b) Discuss the impacts of transportation mode in an inventory cost.

(10 marks)

**Question 2**

To develop a computerized model of a logistics supply chain, a strategy for representing logistics information and supply chain operations is needed. Combination of data and operations of a logistics entity also known as logistics object. Discuss on how to develop a Supply Chain Model (SCM) by using logistics object.

(20 marks)

**Question 3**

"You have been hired by Newton Assembly to improve their daily product of Light Emitting Diode (LED) monitors packaging process. Based on your observation and interview with the supervisor, there are **FOUR (4)** locations in the process before the batch of LED monitors go through to the conveyer and warehouse. LED monitors will arrive exponentially every 10 minutes for 300 occurrences at loading bay. LED monitors will be moved by forklift from loading bay to Scanning Process and next to Labeling Process. After labeling process, the LED monitors will moved by worker for packaging process. After packaging process, the LED monitors will randomly move to the conveyer and to two different warehouses with probability to Warehouse A is 60% and Warehouse B is 40%.

Discuss **FOUR (4)** simulation elements based on the above case study and give **ONE (1)** example of each element. The elements identified are based on the use of WITNESS Simulation software.

(20 marks)

**Question 4**

Raw Material Arrival process at Star Technology Warehouse.

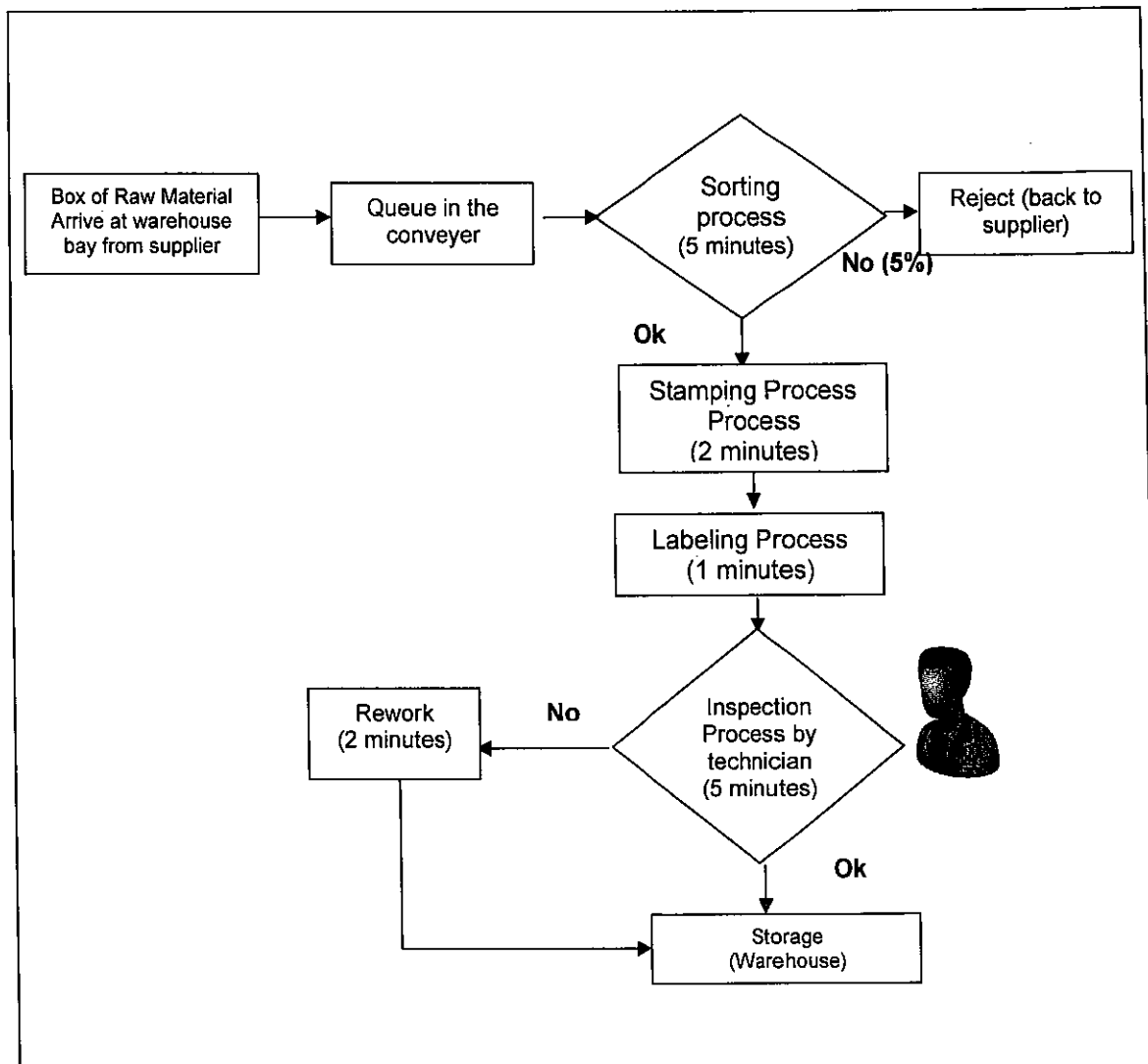


Figure 1: Process Flow

Based on Figure 1, build a simulation model by using appropriate design element and menu from Witness Simulation software. Clearly explain the step to complete the model. Provide recommendations to improve process flow above. Run the simulation for 10 hours.

(20 marks)

**END OF EXAMINATION PAPER**

