



# PIONEER INTERNATIONAL UNIVERSITY

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## UNIVERSITY EXAMINATIONS

ACADEMIC YEAR: 2021/2022

UNIT NAME: BUSINESS SYSTEM MODELLING.

SEMESTER: JAN-APRIL 2022

UNIT CODE: BSCIT 3220.

DATE: APRIL 2022

TIME: 2 HOURS.

INSTRUCTIONS: Answer question one (30 marks) and any other two.

### SECTION A (30MARKS)

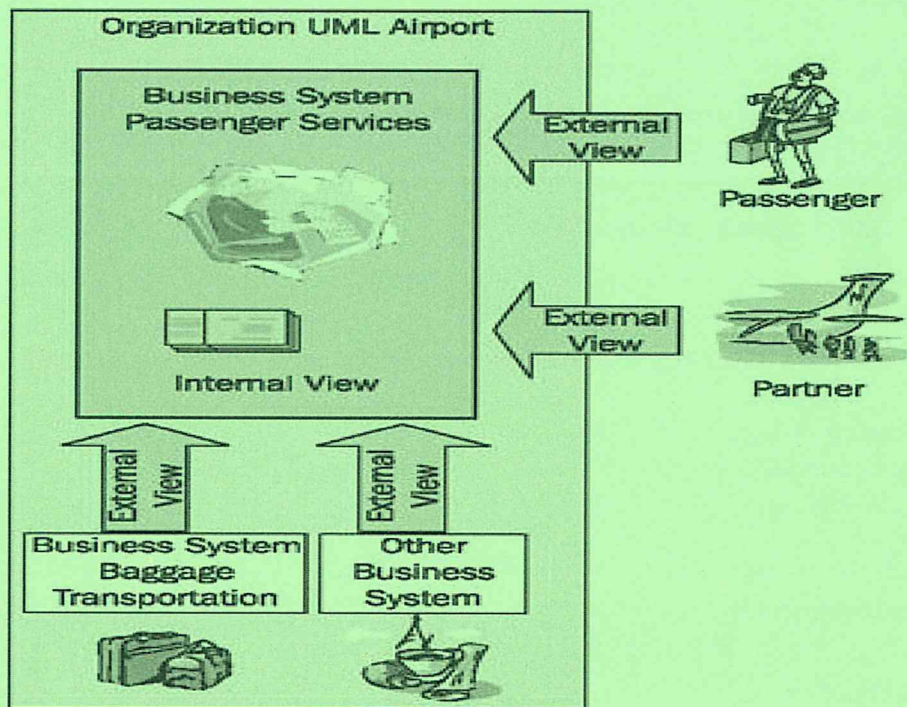
#### QUESTION ONE COMPULSORY (30MARKS)

- a) Define the Business Process Model (2 Marks)
- b) Explain the Following business process in relation to Business Model. (6 Marks)
  - i. Management processes
  - ii. Operational processes
  - iii. Supporting processes
- c) Define the following terms (4 Marks)
  - i) Model.
  - ii) Business Model.
  - iii) Business Processes.
  - iv) System.
- d) Discuss how linear programming could be used to formulate business problem in business Modelling (3Marks)
- e) Explain the advantages and limitation of business system modelling (4Marks)
- f) Elaborate the difference between Open Business system and Closed Business System (4Marks)
- g) Explain interface and interactive of a business system in an environmental perspective (4 Marks)
- h) g) Explain "black box" in business system modelling. (3 Marks)

**SECTION B (40mks)**

**QUESTION TWO (20MARKS)**

- a) Discuss the “One Model—Two Views” business system (2Marks)
- b) Differentiate between external view and internal view in business system. (6Marks)
- c) Define UML as used in Business system modelling (4Marks)
- d) Explain the functionality of this Airport Business system, Figure 1.0 (8 Marks)



**Figure 1.0**

**QUESTION THREE (20MARKS)**

- a) Develop a business system model use case diagram for Passenger Reservation system for Kenya Airways Ltd (10 Marks)
- b) Write notes on the following as in business system modelling (10 Marks)
  - i) User case diagram
  - ii) Class diagram
  - iii) Activity diagram
  - iv) Sequence diagram
  - v) State chart diagram

**QUESTION FOUR (20MARKS)**

- a) Develop a business system model activity diagram for Passenger Reservation system for Kenya Airways Ltd **(10 Marks)**
- b) Discuss any guidelines in business process modelling **(5 Marks)**
- c) Using well labelled diagram explain the business process model **(5 Marks)**

**QUESTION FIVE (20MARKS)**

a)

$$\text{Minimize } z = 5x_1 + 2x_2$$

Subject to

$$6x_1 - 2x_2 + 3x_3 \geq 20$$

$$2x_1 + 4x_2 + x_3 \geq 40$$

$$x_1, x_2, x_3 \geq 0$$

- b) Explain the advantages and limitations of business system modelling **(5 Marks)**
- c) Use simplex procedure to solve the linear programming below **(5 Marks)**

$$\text{Max} = 45x + 80y$$

Subject to

$$10x + 15y \leq 450$$

$$5x + 20y \leq 400$$

$$x, y \geq 0$$

- d) Using examples, discuss the role of the Model in the real-world solution **(5 Marks)**

