



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
DEPARTMENT OF INFORMATION SYSTEMS AND TECHNOLOGY
UNIVERSITY EXAMINATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN BUSINESS INFORMATION SYSTEMS
YEAR 1 SEMESTER 2
2023/2024 ACADEMIC YEAR
MAIN CAMPUS

COURSE CODE: IIS6124

COURSE TITLE: Advances in Business Data Modeling and Management

EXAM VENUE:

STREAM:

DATE:

EXAM SESSION:

TIME:

INSTRUCTIONS

1. Answer any **THREE** questions.
2. Candidates are advised not to write on the QUESTION paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room
4. No Mobile devices are allowed into the Examination Room

Questions 1 and 2 in this paper reference the case description below

Case Description

Bondo Printing Press, a part of a University undertakes printing jobs from different departments of the University. The press can take printing related orders from other organizations or individuals also, but this is a rare practice. Orders once placed cannot be cancelled. Any financial transactions of the various departments with the printing press are done through the University Office only. The University Office maintains the accounts of the press and the various departments of the University. The press acquires its inventory from outside suppliers. This is done by accepting the quotations from various suppliers and placing orders respectively. They maintain information of vendors / suppliers for the raw materials. A supplier can supply more than one item and an item can be supplied by more than one supplier. The supplier may supply the item in parts. Stock for a particular item can be acquired more than once in a year. The suppliers send two copies of invoice to the printing press, of which one is forwarded to the University Office. The press makes payment to the suppliers after obtaining approval from the University Office. The department places printing related order with the press and depending on the inventory, the press is entitled to give a response specifying whether the order will be fulfilled immediately or in the near future. Each department is assigned a budget at the beginning of the year, which becomes an important factor while getting any concession or discount from the press. Once the order is accepted, it has to go through various printing processes for its completion. However, these processes or the sequencing are not mandatory as a job or task may need different processing or handling.

The various processes are:

- Composing
- Pasting
- Plate making
- Printing
- Binding

At the completion of the first copy, it is send to the department for approval, which when received initiates the completion of the order. For the completion of the order, the press maintains a document known as costing sheet which specifies what all processes were applied and the inventory used for the completion of a particular order. This document is important in generating the bill. Three delivery chalans are sent along with the items; one being kept in the press, second being given to the department and the third being sent to the University Office by the press. The invoice is not sent with the items, but it is sent at a later date due to complexity involved in preparing it. Two invoices are sent to the department; of which one is forwarded to the University Office by the department.

Summary of transactions as well as reports related to the printing press, are send to the University Office on a regular basis. These reports or summary is useful to the management for analyzing their current budget and planning accordingly for future budget.

QUESTION ONE**(20 MARKS)**

- (a) Draw a context diagram for the current system (5 marks)
- (b) Draw the level 1 data flow diagram for the current system (7 marks)
- (c) Draw the level 2 data flow diagram for the current system (8 marks)

QUESTION TWO**(20 MARKS)**

- (a) Explain the importance of an entity relationship diagram for the current Bondo Printing Press system. (8 marks)
- (b) Draw a well-labeled entity relationship diagram for the current Bondo Printing Press system. (12 marks)

QUESTION THREE**(20 MARKS)**

In recent years, the field of business data modeling and management has undergone significant advancements due to the rapid evolution of technology, the increasing volume of data generated by businesses, and the need for more efficient decision-making processes.

Discuss the following key areas where these advancements have been particularly impactful:

- (a) Enhanced Data Modeling Techniques (4 marks)
- (b) Integration of Big Data Technologies (4 marks)
- (c) Advanced Analytics and Machine Learning (4 marks)
- (d) Data Governance and Compliance (4 marks)
- (e) Cloud-Based Solutions (4 marks)

QUESTION FOUR**(20 MARKS)**

- (a) Explain purpose, importance, and uses of logical data modeling in the requirements gathering process (10 marks)
- (b) Compare and contrast business intelligence and competitive intelligence. (10 marks)

QUESTION FIVE

(20 MARKS)

Advances in business data modeling and management encompass a wide range of technologies and methodologies aimed at improving how organizations handle their information assets.

Discuss the following **FIVE** key areas where these advances have been particularly impactful:

- (a) Enhanced data modelling techniques (4 marks)
- (b) Integration of Big data technologies (4 marks)
- (c) Advanced analytics and machine learning (4 marks)
- (d) Data governance and compliance (4 marks)
- (e) Cloud-based solutions (4 marks)

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