



QUALIFICATION : BACHELOR OF SCIENCE IN HEALTH INFORMATION SYSTEMS MANAGEMENT	
QUALIFICATION CODE: 07BSHM	LEVEL: 6
COURSE: HEALTH DATABASE MANAGEMENT	COURSE CODE: HDM621S
DATE: NOVEMBER 2023	SESSION: 1
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY: EXAMINATION QUESTION PAPER

EXAMINER: MR. IMMANUEL ANTONIUS

MODERATOR: MS. CHIVUNO–KURIA SHILUMBE

INSTRUCTIONS

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS

1. None

ATTACHMENTS

1. None

This paper consists of 5 pages including this front page.

QUESTION 1: MULTIPLE CHOICE QUESTIONS

[10 MARKS]

1. Choose the correct response from the multiple-choice options provided. **1 Mark per question.**

1.1 What is the primary task of Health Data Management (HDM)?

- A) Organizing patient appointments
- B) Managing healthcare staff schedules
- C) Systematic organization of health data in digital form
- D) Conducting medical research

1.2 What is one of the challenges associated with Health Data Management?

- A) Lack of data security
- B) Excessive data integration
- C) Limited data formats
- D) Frequent data deletion

1.3 What is the primary purpose of Data Control Language (DML) in database languages?

- A) Creating and altering database structures
- B) Provides operations that handle user requests
- C) Retrieving data from tables
- D) Defining data queries

1.4 What is the primary purpose of Data Control Language (DCL) in database languages?

- A) Retrieving data from tables
- B) Creating and altering database structures
- C) Controlling access to data and user privileges
- D) Defining data queries

1.5 What is the primary role of the Data Warehouse in healthcare?

- A) Real-time transaction processing
- B) Storing historical decision support information
- C) Managing patient appointments
- D) Analyzing laboratory test results

1.6 What type of data is typically categorized as unstructured?

- A) Dates and addresses
- B) Social media posts and IoT sensor data
- C) Credit card numbers and billing codes
- D) Vital signs and diagnostic information

1.7 What is Epi Info primarily used for?

- a) Managing financial data
- b) Collecting weather information
- c) Analyzing health data
- d) Designing video games

1.8 What does the Epi Curve chart in Epi Info represent?

- a) The distribution of health events over time
- b) The number of patients by age
- c) The geographical distribution of cases
- d) The frequency of disease outbreaks

1.9 What does HTML stand for?

- a) Hyperlink Text Markup Language
- b) Hypertext Markup Language
- c) Hyper Transfer Markup Language
- d) High-Level Text Manipulation Language

1.10 What is the primary purpose of HTML in web development?

- a) Creating complex programming logic
- b) Defining the structure of web pages
- c) Managing server databases
- d) Designing graphical user interfaces

QUESTION 2: TRUE/FALSE QUESTIONS

[10 MARKS]

2. Evaluate the statements and select whether the statement is true or false. Write the word 'True' or 'False' next to the corresponding number on your ANSWER SHEET.

2.1 Health Data Management involves protecting patient data and ensuring its privacy and security.

2.2 Data Mining is mainly used for the collection of large datasets and not for analysis.

2.3 Relational databases are based on the hierarchical data model.

2.4 Structured data is best managed in non-relational (NoSQL) databases.

2.5 Data Mining is the process of transforming data into information.

2.6 Data warehouses are subject-oriented, integrated, time-variant, and volatile.

2.7 Staging area is an Intermediate temporary storage, where healthcare data undergoes the extract, transform and load (ETL) or the extract, load and transform (ELT) process.

2.8 Epi Info can read data formats in MS Access, Excel, SQL server, and ASCII.

2.9 Routine audits are not essential for maintaining data integrity over time.

2.10 HTML documents can change the look and content of a web page.

SECTION B: SHORT/LONG ANSWER QUESTIONS**[40 MARKS]****QUESTION 3****[15 MARKS]**

- 3.1 Explain the concept of Health Database Management (HDM) and its role in healthcare. [3]
- 3.2 What is a Database Language (DBL)? [2]
- 3.3 A medical institution needs to create a new database to store patient medical records, including their diagnoses, treatment plans, and test results. They also want to be able to update this information as needed. What type of database language and statement should they use for these tasks? [4]
- 3.4 What are some examples of Transaction Control Language (TCL) statements? [3]
- 3.5 A healthcare software development team is working on a project and needs to make structural changes to an existing medical database, including adding new fields for patient information or altering existing ones. What type of database language and statements should they use for these tasks? [3]

QUESTION 4**[25 MARKS]**

- 4.1 The Ministry of Health wants to analyse electronic health records (EHRs) to improve patient care and identify trends in disease prevalence. Describe the stages of the data mining process they should. [10]
- 4.2 What challenges do executives still face despite technology advancements in handling substantial datasets? [2]
- 4.3 List at least five common applications of data mining in the Health Sector. [5]
- 4.4 How can the implementation of data mining benefit a healthcare institution in terms of improving patient care and operational efficiency? Describe four benefits. [8]

QUESTION 5**[18 MARKS]**

- 5.1 What is the core function of a Business Intelligence Solution in supporting data analysis and reporting in healthcare? [2]
- 5.2 Provide two examples of structured data, and list at least one benefit and the benefits and drawbacks associated with it? [4]
- 5.3 In a medical database, there's a need to manage patient information efficiently by performing various SQL operations like extracting specific data, updating records, using DISTINCT to identify unique values, and deleting records based on conditions. Use SQL to;
- a. Extract a list of patients who have undergone an Appendectomy [3]
 - b. Update patients records that were moved from Ward A to Ward B [3]
 - c. Retrieve a list of distinct blood types from the patient records [3]
- 5.4 What is the primary purpose of the SQL DELETE and DISTINCT statements in a health database? [4]

QUESTION 6**[22 MARKS]**

- 6.1 What are validation rules, and how do they contribute to data quality in healthcare records? [3]
- 6.2 How do dropdown lists and auto-fill functionality benefit healthcare data entry interfaces? [2]
- 6.3 You are tasked with entering data for a clinical trial involving various healthcare facilities. How can data verification be employed to ensure consistency and accuracy in the dataset across different facilities? [10]
- 6.4 Differentiate between data validation and data verification in healthcare data management, and explain their respective roles in ensuring data accuracy. [4]
- 6.5 Why is data security critical in healthcare, and how can encryption protect patient data? [3]

END OF QUESTION PAPER