



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**

**DEPARTMENT OF INFORMATION SYSTEMS AND TECHNOLOGY**

**UNIVERSITY EXAMINATION FOR MASTER OF SCIENCE IN HEALTH**

**INFORMATICS**

**1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER 2024/2025 ACADEMIC YEAR**

**MAIN CAMPUS**

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**COURSE CODE: ICH 5231**

**COURSE TITLE: HEALTH DATA TECHNOLOGY AND ARTIFICIAL INTELLIGENCE**

**EXAM VENUE: \_\_\_\_\_ STREAM: ICT**

**DATE: 23/4/2025 EXAM SESSION: 14.00-17.00**

**TIME: 3HOURS**

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#### **INSTRUCTIONS**

- 1. Answer any three questions**
- 2. Phones are not allowed**
- 3. All rough work should be done in the examination booklets**
- 4. Candidates are advised not to write on the question paper**

### **QUESTION ONE (30 MARKS)**

Consider a client who accesses your telemedicine platform. Later on the client expresses complaints with regards to personal data leakages. This clearly denotes health data breaches that could harm patient's confidence and trust. You would need to ensure that your organization complies with all the privacy laws and regulations for health data and information management. In this regard, discuss the any ten security compliance considerations that you would make for health data protection. (20 marks)

### **QUESTION TWO (20 MARKS)**

Your services as a health informatics consultant have been contracted to brainstorm on the integration of clinico-genomic data. Come up with a basic design that would propel the building of a model. Demonstrate the various factors that you would incorporate in the model. Use relevant mathematical computations to show your idea. This suggestion that you adopt should strengthen real life diagnostic purposes while showing how they are relevant to clinical diagnosis. (20 marks)

### **QUESTION THREE (20 MARKS)**

- a. Healthcare data analysis outcomes demand a very rigorous data validation process. Discuss. (10 marks)
- b. Elaborate on the health data governance issues that you would emphasize while dealing with chronic illness patient's data. (10 marks)

### **QUESTION FOUR (20 MARKS)**

- a. Discuss the ways in which you would design a system to manage clinical trial information as a health informatics expert. (10 marks)
- b. Discuss five relevant standards and five best practices for clinical database design. (10 marks)

### **QUESTION FIVE (20 MARKS)**

- a. Healthcare data visualization can be categorized into at least four types. Data variations demand different visualization techniques. Using ideal illustrations elaborate on this aspect. (12 marks)
- b. Highlight four various data formats that you are likely to work with in healthcare data management indicating the best storage and preservation formats ideal for each. (8 marks)