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POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MSc (BIOMEDICAL INFORMATICS) SEMESTER III EXAMINATION
OCTOBER 2026

Date:- 01st October 2026

Time:- 1.30 p.m. – 3.00 p.m.

SEQ PAPER

Answer **all three (03)** questions.
Answer each question in a separate book.

Part A - M11 - Management

1. The Ministry of Health is introducing an electronic discharge summary system in several hospitals. Clinicians are concerned about additional workload, nurses remain unclear about their responsibilities. Frequent staff rotations between units further adds to the challenges of implementing the system effectively. You are the health informatician assigned to manage the above project.
 - 1.1. Identify management principles that are particularly important in this change. (10 marks)
 - 1.2. Briefly explain two (02) of them listed above 1.1. (20 marks)
 - 1.3. Explain following management functions that should be applied before the implementation.
 - a. leadership
 - b. delegation
 - c. communication. (30 marks)
 - 1.4. Describe a change-management plan consisting of preparation, initial use and reinforcement. (20 marks)
 - 1.5. Specify how you would organise staff support and exercise control through feedback and performance monitoring. (20 marks)

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Part B - M13 - Medical Data and Information Management

2. You have been tasked with integrating a Laboratory Information Management System (LIMS) and an Electronic Medical Record (EMR) system in a low resource hospital.
 - 2.1.
 - 2.1.1. Define health data interoperability. (10 marks)
 - 2.1.2. List the four (04) levels of interoperability and describe each level with an example from the proposed laboratory integration. (20 marks)
 - 2.2. Compare and contrast HL7[®] v2.x and HL7[®] FHIR[®] to evaluate their suitability for the above deployment. In your response, systematically compare both standards across their:
 - a. message formats and interaction workflows
 - b. infrastructure and network demands
 - c. parsing tools and middleware requirements
 - d. terminology and code system bindings
 - e. development/configuration complexity and developer availability
 (50 marks)
 - 2.3. Briefly explain what HL7[®] FHIR[®] resources are and identify three (03) FHIR[®] resources with their role in exchanging laboratory orders and results. (20 marks)

Part C - M14 - Disease Surveillance and IT for Population Genomics

3. Following a community religious event, several hospitals and Medical Officer of Health (MOH) areas report an unusual increase in patients presenting with acute gastroenteritis. Preliminary investigations indicate that many affected individuals attended the same event and consumed food from common vendors. You are the Medical Officer in Health Informatics attached to the Regional Director of Health Services Office working as a member of the multidisciplinary outbreak investigation team.
 - 3.1. Describe the key steps of an outbreak investigation, from verification of the outbreak to implementation of control measures. (20 marks)
 - 3.2. Describe how you support data collection, management and integration during this outbreak investigation. (40 marks)
 - 3.3. Discuss how digital health information systems can support different levels of the healthcare hierarchy to investigate and manage the outbreak in real time. (40 marks)