

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**MSc (BIOMEDICAL INFORMATICS) END OF SEMESTER I**  
**EXAMINATION – JULY 2020**

**Date :- 17<sup>th</sup> July 2020**

**Time :- 9.30 a.m -11.00 a.m**

**Answer all questions.**

**Answer each question in a separate book.**

**MODULE 1**

**Mathematics for Computing and Object-Oriented Programming**

1.

1.1. Compare and contrast functional and object-oriented programming methods. (30 marks)

1.2. One of the salient features of Java programming language is its platform independence. Explain how Java platform independence is achieved (30 marks)

1.3. A simple application is to be developed to calculate the percentage of positive Polymerase Chain Reaction (PCR) tests from the total number of tests administered daily. If percentage is more than 10% a message advising to increase the number of tests is to be displayed. Please write a pseudocode for the application with necessary steps for initializing variables, data entry, calculations, decisions and output.

(40 marks)

Contd...2

## MODULE 4

### Networking, Computer Hardware, Operating Systems and Application Packages

2.

2.1. Write short notes on

- a. LAN
- b. MAN
- c. WAN

(15 marks)

2.2. Explain the functions, protocols and services of each layer of TCP/IP model

(25 marks)

2.3. Deputy Director General of Health Services (DDG) in charge for Laboratory Services needs to record information on all the Polymerase Chain Reaction (PCR) tests done in PCR laboratories throughout the country. As the Health Informatician attached to the Office of the DDG Laboratory Services, suggest a suitable software architecture giving justifications.

(40 marks)

2.4. List the advantages and disadvantages of using Free and Open Source Software (FOSS) for the purpose discussed in 2.3 above

(20 marks)

## Module 5

### Software Engineering and Software Project Management

3. The best way to develop software products is to use agile software engineering methods that are geared to rapid product development and delivery.

3.1. Briefly explain 3 key principles behind agile software development

(30 Marks)

3.2. When would you recommend against the use of an agile method for developing a software system? Explain briefly

(40 Marks)

3.3. Discuss the circumstances in which an organization might decide to scrap a system when the system assessment suggests that it is of high quality and high business value

(30 Marks)