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POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MSc (BIOMEDICAL INFORMATICS) SEMESTER II BATCH 10
EXAMINATION – JANUARY 2021 (RESCHEDULED)

Date :- 13th January 2021 **Time:-** 1.00 p.m. – 2.30 p.m.

SEQ PAPER

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

Module 6 – Basic Epidemiology and Statistics

1. Disease surveillance is becoming a hot topic with the emergence of COVID-19 infection globally. Sri Lanka has had a disease surveillance system over a century and is faced with modernising it to face the current challenges of pandemic.

1.1. Define the term "Disease Surveillance". (10 marks)

1.2. Briefly describe the data collection mechanism (data flow) of notifiable disease surveillance in Sri Lanka. (25 marks)

1.3. Briefly discuss the barriers to faster and more accurate data flow. (15 marks)

1.4. Discuss how big data analytics can contribute to managing epidemics such as the present outbreak of 'COVID-19'. (50 marks)

Module 8 - Public Health Informatics

2.

2.1. Compare and contrast public health information systems and clinical information systems. (25 marks)

2.2. Describe advantages and disadvantages of fragmented information systems. (20 marks)

2.3. Describe the role played by Standards in enabling Interoperability in Sri Lanka. (20 marks)

2.4. Describe different types of Interoperability giving examples. (35 marks)

Contd...../2-

Module 9 – Bioinformatics

3.

3.1. Tertiary care hospital plans to introduce Whole Exome Sequencing (WES) as part of a rare disease and cancer diagnostic flagship project. As the Medical Officer in Health Informatics (MO-HI) you are required to maintain a repository of the generated data.

3.1.1. Describe the attributes you would consider in designing and maintaining this database. (20 marks)

3.1.2. Functional annotation of identified variants is a key requirement in interpretation of this data.
Describe three (03) bioinformatics resources which can be used to predict the effects of single nucleotide variants which will be identified through WES. (30 marks)

3.2. Write short notes on the following:

3.2.1. DNA sequence alignment and analysis software (20 marks)

3.2.2. Personalised genetic testing (15 marks)

3.2.3. Machine learning (15 marks)