

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

**MSc (BIOMEDICAL INFORMATICS) END OF SEMESTER II**  
**EXAMINATION (Repeat) – DECEMBER 2016**

**Date :-** 22<sup>nd</sup> December 2016

**Time :-** 1.00 p.m. – 2.00 p.m.

**Question 1**

**Part A**

1.1.

- 1.1.1. Briefly discuss the features and functions of an interface of a molecular biology database. (50 marks)
- 1.1.2. Describe the different organizational structures found in commonly used biological databases. (50 marks)

**Part B**

1.2.

- 1.2.1. Name a biological database to perform each of the following (20 marks)
  - (a) Find genes associated with a disease of interest.
  - (b) Find clinical significance of a single-nucleotide polymorphism (SNP) or Insertion/Deletion (InDel).
- 1.2.2. Name a bioinformatics tool to perform each of the following (20 marks)
  - (a) Find genes similar in sequence to a gene of interest.
  - (b) Align two (02) nucleotide sequences.
- 1.2.3 Discuss applications in bioinformatics in addressing health issues. (60 marks)

**Part C**

- 1.3.1. Briefly describe how public health services differs from clinical practice  
(40 marks)
- 1.3.2. Briefly discuss the scope for application of informatics in public health services.  
(60 marks)

**Question 2****Part D**

- 2.1.1. Briefly describe vertical and horizontal integration in context of public health information systems with a suitable example for each. (100 marks)

**Part E**

- 2.2. Consider the following data set of marks obtained by a group of 33 students for subject X

|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| 80 | 94 | 72 | 74 | 95 | 77 | 82 | 95 | 90 | 81 | 82 |
| 68 | 85 | 91 | 69 | 81 | 88 | 92 | 71 | 73 | 95 | 74 |
| 82 | 89 | 90 | 81 | 82 | 62 | 84 | 91 | 65 | 82 | 89 |

- 2.2.1. Calculate the Mean (15 marks)
- 2.2.2. Find the Median (15 marks)
- 2.2.3. Find the Mode (15 marks)
- 2.2.4. Compute the standard deviation (30 marks)
- 2.2.5. Compute the Z score when a student has obtained 90 marks for subject X.  
(25 marks)

**Part F**

2.3. Following chart shows infant mortality rate in Sri Lanka from 1960-2010.

2.3.1. Define Infant Mortality Rate (IMR) (15 marks)

2.3.2. What are the labels for x and y axes? (20 marks)

2.3.3. Describe on the overall trend reflected in the chart (35 marks)

2.3.4. Suggest possible reasons for the trend described above in 2.3.3 (30 marks)

