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**Code No. : B04-208**

Fourth Semester Online Examination, May-June, 2022

**M. Sc. BIOTECHNOLOGY**

**Paper II**

**CLINICAL RESEARCH AND BIOINFORMATICS**

Time : Three Hours ] [ Maximum Marks : 80

**Note :** ● Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.

● Part C (Short answer type) and D (Long answer type) of each question should be answered within the word limit 200-250 and 400-450.

**Unit-I**

1. (A) What is a placebo ? 2
- (B) What is informed consent in a clinical trial ? Why is it important ? 2
- (C) Define hybrid studies with its different cases. 4

**Or**

What are the different phases of clinical trial ?

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- (D) Describe the influential codes of ethics and regulations that guide ethical clinical research ? 12

**Or**

What is post marketing surveillance (PMS) in clinical research ?

**Unit-II**

2. (A) What are the risks and limitations of genetic testing ? 2
- (B) What is Non-Invasive Prenatal Testing (NIPT) and what disorders can it screen for ? 2
- (C) What are the Ethical, Legal and Social Implications (ELSI) associated with patients in genetic studies. 4

**Or**

What is pharmaco-epidemiology method of research study ? How is pharmaco-epidemiology important to public health ?

- (D) Define implementation research ? State the role of implementation research in assessing and

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improving performance in population health with special reference to its various tools. 12

**Or**

Mention the various ways of assessing the accuracy of diagnostic tests with special attention to its sensitivity, specificity, predictive value likelihood ratio, and receiver operator characteristic curves.

**Unit-III**

- 3. (A) What is data mining in bioinformatics ? 2
- (B) State the difference between global & local alignment. 2
- (C) What do you understand by sensitivity and specificity in BLAST ? 4

**Or**

Explain the protein information resources sequence database with special reference to PDB.

- (D) Explain the Genbank, EMBL, DDBJ biological sequence file format and its importance in biotechnology. 12

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**Or**

Discuss the application of BLAST in sequence homology search.

**Unit-IV**

- 4. (A) What is the significance of E value in a BLAST result and how it is different from that of the score ? 2
- (B) Define Entrez. 2
- (C) Briefly explain the differences between PSI-BLAST and PHI-BLAST. 4

**Or**

Explain in detail on how to submit sequence data to NCBI database ?

- (D) What are the best tools of bioinformatics for mapping studies of human genome ? 12

**Or**

Describe the different stages of phylogenetic analysis.

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