



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
DEPARTMENT OF BIOLOGICAL SCIENCES
2024 1 EXAMINATION

COURSE CODE: BIO 316

COURSE TITLE: BIOINFORMATICS

CREDIT UNIT: 2 UNITS

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE AND ANY TWO OTHERS.

Q1

- a. Explain the objectives of database. (4marks)
- b. List any five (5) bioinformatics search engines. (5marks)
- c. List and explain any three (3) advantages of scripting language. (6marks)
- d. Explain any three (3) of the listed bioinformatics databases. (6marks)
 - i. DNA Databank of Japan
 - ii. European Nucleotide Archives
 - iii. Protein databases
 - iv. Reactome
- e. Succinctly explain any three (3) of the listed bioinformatics processing tools.
 - i. AACOMP
 - ii. NEME
 - iii. PHI-BLAST
 - iv. TOPITS

(9marks)

Q2

- a. Enumerate factors that must be taken into consideration when designing bioinformatics tools, software and programmes. (5marks)
- b. Provide holistic insight into the program developed by Stephen Altschul of NCBI in 1990 (5marks)
- c. Enumerate six (6) applications of phylogenetic tree (3marks)
- d. Explain the components of a phylogenetic tree. (3marks)
- e. Succinctly provide insight into FASTA. (4marks)

Q3

- a. What is Sequence analysis? (4marks)
- b. Write note on any two (2) of the followings; (16marks)
 - i. Sequence alignment analysis
 - ii. Paired sequence alignment
 - iii. Global alignment

Q4

- a. Itemize any four topics that are considered demanding in Bioinformatics. (4 marks)
- b. Compare pairwise alignment and multiple sequence alignment under the followings;
 - i. Application
 - ii. Examples of tools

(16marks)

Q5

- a. What is Biopharmaceuticals? (3marks)
- b. Enumerate five (5) limitations of phylogenetic tree. (5marks)
- c. Succinctly explain Bioperl and its working modules. (12marks)

Q6

- a. Relate this bioinformatics software (cell designer and molecular interaction) to biotechnology (8marks)
- b. Discuss the implementation of bioinformatics in biotechnology. (12marks)

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