



**DR-003-2016043**

Seat No. \_\_\_\_\_

**B. Sc. (Sem. VI) Examination**

**March / April - 2022**

**Biotechnology : Paper - BT-603**

*(Advance Molecular Biology & Bioinformatics)*

**Faculty Code : 003**

**Subject Code : 2016043**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- 1 (a) Answer the question : (**one** mark each) 4
- (1) Asymmetric PCR is used to generate \_\_\_\_\_ DNA.
  - (2) Dideoxy method is used for DNA \_\_\_\_\_.
  - (3) Unreacted nucleotide in phosphoramidite method of oligonucleotide synthesis is washed by \_\_\_\_\_.
  - (4) To sequence larger molecules, individual chromosomes are purified and broken into \_\_\_\_\_ or larger random fragments, which are cloned into vectors designed for large molecules.
- (b) Answer the questions : (any **one** out of two) 2
- (1) What are the types of hybridization technique ?
  - (2) Define probe.
- (c) Answer the questions : (any **one** out of two) 3
- (1) Explain the principle of pyrosequencing.
  - (2) Explain Sangers method of sequencing.
- (d) Answer the questions : (any **one** out of two) 5
- (1) Explain the mechanism of artificial DNA synthesis.
  - (2) Enlist and explain the types of PCR.

- 2 (a) Answer the questions : (**one** mark each) 4
- (1) Sometimes successive rounds of screening of a genomic library are carried out and an ordered collection of clones is done in a linear fashion, then the, process is called as \_\_\_\_\_.
  - (2) Restriction enzyme recognize \_\_\_\_\_ sequence.
  - (3) In 1990 the first gene therapy was given to treat which deficiency ?
  - (4) Method used to describe in vivo DNA protein interaction \_\_\_\_\_.
- (b) Answer the questions : (any **one** out of two) 2
- (1) Enlist PCR and non PCR based molecular markers.
  - (2) What is restriction mapping ?
- (c) Answer the questions : (any **one** out of two) 3
- (1) Explain the mechanism of DNA foot printing technique.
  - (2) Difference between, microsatellite and minisatellite.
- (d) Answer the questions : (any **one** out of two) 5
- (1) What is gene therapy? Explain type of gene therapy.
  - (2) Explain the methods of chromosome jumping and walking.
- 3 (a) Answer the questions : (**one** mark each) 4
- (1) Human genome project completed in the year \_\_\_\_\_.
  - (2) The identification of drugs through the genomic study is called \_\_\_\_\_.
  - (3) The first draft of human genome project was first published in 2001 in the journal.
  - (4) Full form of NCBI.
- (b) Answer the questions : (any **one** out of two) 2
- (1) What are the objectives of human genome project ?
  - (2) What is biological database ?
- (c) Answer the questions : (any **one** out of two) 3
- (1) Application of human genome project.
  - (2) Importance of biological database.
- (d) Answer the questions : (any **one** out of two) 5
- (1) Enlist and explain any two major, bioinformatics resources.
  - (2) Define bioinformatics and explain the branches and role of bioinformatics in biotechnology.

- 4 (a) Answer the questions : (**one** mark each) 4
- (1) \_\_\_\_\_ is a metabolic database.
  - (2) RCSB is a database of protein \_\_\_\_\_.
  - (3) \_\_\_\_\_ is the search and retrieval tool of NCBI.
  - (4) InterPro is used to study \_\_\_\_\_.
- (b) Answer the questions : (any **one** out of two) 2
- (1) Which are the primary and secondary database of protein ?
  - (2) What is CATH ?
- (c) Answer the questions : (any **one** out of two) 3
- (1) Explain the levels of SCOP.
  - (2) What are different types of models used by InterPro ?
- (d) Answer the questions : (any **one** out of two) 5
- (1) Write a note on UniProt.
  - (2) Write a note on importance of PubMed.
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- 5 (a) Answer the questions : (**one** mark each) 4
- (1) Full for of BLOSUM.
  - (2) The initiation of FASTA format has \_\_\_\_\_ symbol.
  - (3) QSAR method involves \_\_\_\_\_ properties.
  - (4) Primer3 is \_\_\_\_\_ tool.
- (b) Answer the questions : (any **one** out of two) 2
- (1) What is comparative genomics ?
  - (2) What is global and local alignment ?
- (c) Answer the questions : (any **one** out of two) 3
- (1) What are the general rules of primer designing ?
  - (2) What are the types of BLAST ?
- (d) Answer the questions : (any **one** out of two) 5
- (1) Write a note on computer aided drug discovery.
  - (2) What is multiple sequence alignment ? Write the types of alignment and applications of MSA.