

**C 60086**

(Pages : 2)

Name.....

Reg. No.....

**SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2019**

(CUCBCSS)

Zoology

ZOL 6B 12—MOLECULAR BIOLOGY AND BIOINFORMATICS

Time : Three Hours

Maximum : 80 Marks

**Part A**

I. One Word Questions. Answer *all* questions. Each question carries 1 mark :

- 1 Synthesis of DNA from an RNA template is called \_\_\_\_\_.
- 2 Write the initiation codon of eukaryotes.
- 3 RNA molecules that are capable of catalyzing specific biochemical reactions are called \_\_\_\_\_.
- 4 RNA polymerase binding site of DNA is called \_\_\_\_\_.
- 5 Non-functional genes present in the genome are called \_\_\_\_\_.
- 6 What is the full form of DDJB ?
- 7 Write any *one* of the metabolite databases.
- 8 Name the similarity search program developed by NCBI.
- 9 Each record in a database is called \_\_\_\_\_.
- 10 GenBank, the nucleic acid database is maintained by \_\_\_\_\_.

(10 × 1 = 10 marks)

**Part B**

II. Short Answer Questions. Answer any *ten* questions. Each question carries 2 marks :

- 11 Explain one gene - one polypeptide hypothesis.
- 12 What is C-value paradox ?
- 13 Write short notes on wobble hypothesis.
- 14 Write notes on enhancer sequences.
- 15 What is gene modulation ?

**Turn over**

- 16 Differentiate between introns and exons.
- 17 Give short account on secondary databases.
- 18 What is scoring matrix ?
- 19 Write short notes on Clustal X.
- 20 Why dry lab term is used for defining bioinformatics ?
- 21 What is data mining ?
22. What is redundant database ?

(10 × 2 = 20 marks)

### Part C

III. Paragraph Questions. Answer any *five* questions. Each question carries 6 marks :

- 23 Explain search engine and its applications with suitable example.
- 24 What is microarray technique. How is it useful for data analysis ?
- 25 Explain the various types of DNA sequencing and its applications in genomics.
- 26 Critically analyse the ethical issues in Bioinformatics.
- 27 What is genetic material. Explain Hershey and Chase experiment.
- 28 Define genetic code and explain any *five* features of genetic code.
- 29 Write the unique features of eukaryotic genome, highlighting the nature of repetitive sequences.
- 30 Give an account on the synthesis of eukaryotic mRNA and its modifications.

(5 × 6 = 30 marks)

### Part D

IV. Essay Questions. Answer any *two* questions. Each question carries 10 marks. :

- 31 Explain the various steps involved in the synthesis of proteins.
- 32 Define operon. Give a detailed account on the working of lac operon with suitable illustrations.
- 33 Give a detailed account on the major biological databases in Bioinformatics.
- 34 Explain the various types of sequence alignment. Add a note on the various types of tools used for sequence alignment.

(2 × 10 = 20 marks)