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 x 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 x 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 x 10 = 20 marks)