C 21111 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2017

(CUCBCSS—UG)

Zoology

ZOL 6B 12—MOLECULAR BIOLOGY AND BIOINFORMATICS

Time : Three Hours Maximum : 80 Marks

A. Answer *all* questions. Each carries 1 mark :

1 The 'one-gene-one-enzyme' hypothesis was put forward by ————————.

2 What is a retrovirus ?

3 What is a polyA tail ?

4 What are introns ?

5 The person who discovered jumping genes is ————————.

6 The bioinformatics tool used to search for pair wise sequence similarity is ————————.

7 An example for a secondary database is ————————.

8 Name the person who got Nobel prizes for inventing the technique of protein as well as DNA sequencing.

9 Name the person considered as the 'mother' of bioinformatics.

10 Expand the abbreviations.

(a) NCBI.

(b) DDBJ.

(10 × 1 = 10 marks)

B. Answer any *ten* questions in two *or* three sentences each. Each carries 2 marks :

11 Write down the central dogma of molecular biology.

12 What is 'C-value paradox' ?

13 What is a triplet codon ?

14 What are house-keeping genes ? Give one example.

15 What is the 'Khorana technique' ?

16 What is splicing ? Why is it not seen in prokaryotes ?

Turn over

17 What is a molecular chaperone ? What is its function ?

18 Write a short note on mitochondrial genome.

19 What is a primary database ? Give one example.

20 Name two visualisation softwares used in bioinformatics.

21 What is a microarray in bioinformatics ?

22 Define the term metabolomics.

(10 × 2 = 20 marks)

C. Answer any *five* questions in not more than *a paragraph* each. Each carries 6 marks :

23 What is satellite DNA ?

24 Explain the 'wobble hypothesis'.

25 Write down the characteristic features of the genetic code.

26 Explain how transcription is initiated.

27 Give a brief explanation of the different types of DNA.

28 How is post transcriptional control of protein synthesis effected ?

29 Give a brief account of the human genome project.

30 Distinguish between proteomics and genomics. What are the interpretations that can be made from their data ?

(5 × 6 = 30 marks)

D. Write essays on any *two* of the following. Each carries 10 marks :

31 Describe the Hershey-Chase experiment and the hypothesis it proved.

32 Describe the processes involved in transcription.

33 Trace the history of bioinformatics and its applications in biology.

34 Discuss any two data analysis tools used in bioinformatics and their applications.

(2 × 10 = 20 marks)