D 40079 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH/APRIL 2018

(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 Give an example for retrovirus.

2 What is 'C-value'?

3 The genetic code for "start" in protein synthesis in eukaryotes is

4 Who proposed the central dogma of molecular biology?

5 The organism used by Griffith to prove bacterial transformation is _____.

6 The total number of codons in the genetic code is _____.

7 Expand the abbreviations 'DDBJ' and 'EMBL'.

8 What is a query sequence ?

9 Give the name of any one search engine used to search for nucleotide sequences.

10 Expand the abbreviations (a) BLAST ; (b) PIR.

(10 × 1 = 10 marks)

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

11 What does the 'one-gene-one-enzyme' hypothesis say ?

12 What is a spliceosome ?

13 Expand the abbreviation 'VNTR'.

14 What is a ribozyme? What is its function ?

15 What is coupled transcription and translation ? Where does is occur ?

16 What was Khorana's contribution in deciphering the genetic code ?

17 What is a hydrogen bond ?

18 What is a micro RNA ? What is its function ?

Turn over

19 What is a secondary database ? Give one example.

20 What are the uses of DNA sequences ?

21 What is a metabolome? What does it signify ?

22 What does similarity in genetic sequences signify ?

(10 × 2 = 20 marks)

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

23 Describe Griffith's experiment.

24 Write down the properties of the genetic code.

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

26 Sketch and label the structure of the ribosome.

27 What was the role of Margaret Dayhoff in bioinformatics ?

28 Distinguish between a nucleoside and a nucleotide.

29 What are the features provided in the NCBI web page ?

30 Why is it important to keep the genetic data of individuals private and confidential ?

(5 × 6 = 30 marks)

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

31 Describe the molecular structure of the chromosome.

32 Describe the processes involved in translation.

33 Using the lac operon system as the model, describe the operon concept.

34 Give an account of the ethical issues involved in the application of bioinformatics in medicine.

(2 × 10 = 20 marks)