

**D 40079**

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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 it 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)