Printed Pages:04

H-6545

M.Sc. (IV Semester) Examination, 2022

ZOOLOGY

Paper - V

(Genomics, Metagenomics and Epigenetics-Genomics)

Time Allowed: Three Hours

Maximum Marks: 70

Section-A

Note:- Attempt any ten questions. Each question carries one mark.

Q.I. Objective Type Questions **1x10**

1. The unit of genetic map is.....
2. The size of the human genome is approximately .....base-pairs
3. The short DNA fragments that are placed onto a microarray are called ……..
4. The technique used to determine order of bases in a DNA molecule is called ……..

5. An example of protein sequence database is .....
6. The process of finding the relative location of genes on a chromosome is called .....
7. LINEs and SINEs are the examples of:
   a) LTR-retrotransposons
   b) Non-LTR-retrotransposons
   c) Composite transposons
   d) Ac Elements
8. Bioinformatics is also regarded as:
   a) Computational Biology
   b) Computer Biology
   c) Computational Biotechnology
   d) None of the above
9. Genome wide gene expression analysis is performed by using:
   a) DNA-microarray
   b) Southern Hybridization
   c) Northern Hybridisation
   d) PCR
10. The mitochondrial DNA is:
    a) simple single stranded circular DNA molecule

b) simple double stranded circular DNA molecule

c) simple double stranded linear DNA molecule

d) simple single stranded linear DNA molecule

11. Genome map shows identifiable landmarks on a chromosome. **(State whether true or false)**
12. Retrotransposons transposes through the RNA intermediates. **(State whether true or false)**

Section-B

Note:- Attempt any five questions. Each question carries two marks.

Q. II. Very Short Answer Type (25-30 Words) 2x5

1. Define transcriptome.
2. Define genome mapping.
3. Define proteomics.
4. What are conserved regions within the genome?
5. Write full form of: 1. SINES 2. EST 3. SNPs 4. LINES
6. What are repetitive elements?
7. Define mutagenesis.

Section-C

Note:- Attempt any five questions. Each question carries four marks.

Q.III. Short Answer Type (250 Words) 4x5

1. Give a brief account on mitochondrial genome.
2. Describe the concept of "C-value paradox".
3. Give a brief account on retro transposition.
4. Discuss the major objectives and outcomes of human genome project.
5. Give a brief account on pseudogenes.
6. Discuss the strategy to study protein-protein interaction.
7. Give a brief account on gene targeting.

Section-D

Note:- Attempt any three questions. Each question carries ten marks.

Q.IV. Essay type (more than 500 Words) 3x10

1. Give a detailed account on organization and structure of eukaryotic genome.
2. What is meant by a physical map? What are the markers utilized for construction of physical map? Briefly describe the construction of physical map with example.

3. What are DNA databases? Give a detailed account on DNA sequence analysis using bioinformatic tools. Also give appropriate examples.
4. Discuss the principle and application of high throughput DNA-sequencing technique. Also discuss the application of DNA sequencing.

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