Total No. of Printed Pages:3

SUBJECT CODE NO:- 6513
FACULTY OF SCIENCE AND TECHNOLOGY
M.Sc. (Sem-II)
Examinations March/April-2022 (To be held in June/July-2022)
Zoology
Genetics and Bioinformatics-ZOO-201

[Time: 3.45 Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) All questions carry equal marks.
ii) Draw well labelled diagram wherever necessary.

Part 'A'

Q.1 Attempt the following multiple-choice questions: 20

i) Complementation test also called a "cis-trans" test is _____
   a) A cross that can identify is a mutation at one gene locus is dominant.
   b) A test to see if two genes affect each other.
   c) A cross that can identify if a mutation at one gene locus is recessive.
   d) A cross that can identify if a pheno-type is caused by mutations with in the same gene or different genes.

ii) The central block of the composite transposable elements consists a gene for _____
   a) Antibiotic resistance
   b) Transposase
   c) Integrase
   d) Lactamase

iii) How does genome complexity of denatured DNA measures?
   a) Giemsa staining
   b) Reverse chromatography
   c) Denaturation Kinetics
   d) Renaturation Kinetics

iv) The principle of genetic linkage refers to :
   a) The observation that some genes will be inherited together, if they are located in the same chromosomes.
   b) The observation that some genes will be inherited together, is they are located in the same chromosome.
   c) The discovery that multiple genes are responsible for same trait.
   d) The fact that are different levels for a given gene will be located at the same position in a chromosome.

v) Which of the following is the example of biological secondary database?
   a) SWISS-PROT
   b) EMBL
   c) PDB

d) PROSITE

vi) The term bioinformatics was coined by _____
a) Singer & Nicolson
b) Honeweg & Wilhelm
c) Johannsen & Kornberg
d) Khorana & Kornberg

vii) Which of the following statement commonly describes the recombination frequency between two genes?
a) The closer the two genes are to each other on a chromosome, higher is the frequency of recombination between them.
b) The more distant the two genes are to each other on a chromosome, higher is the frequency of recombination between them.
c) If two genes are located on the same chromosome then no recombination events can occur between them.
d) If two genes are locate on different chromosomes then the frequency of recombination is high between them.

viii) The genetic codon is s triplet and there are 64 codons. How many codon is a doublet?
a) 4 b) 8 c) 16 d) 32

ix) Which of the following is/are the examples of incomplete dominance?
I) ABO blood grouping in humans.
II) Mira bills jalapa
III) Human hair color.
a) Only I b) Only II c) I and II d) I, II and III

x) An exception to Mendel's law of independent assortment is_____
a) Incomplete Dominance
b) Codominance
c) Nondisjunction
d) Linkage

Part 'B'

(Attempt any five)

Q.2 Describe the nucleosome model of chromosome in detail. 12

Q.3 Explain the genetic mapping by tetrad analysis in Neurospora. 12

Q.4 What is bioinformatics? Write down the scope of bioinformatics with its applications. 12

Q.5 Give detailed account on transposable elements in eukaryotes with its significance. 12

Q.6 Describe the types of sequence alignment along with primary methods of producing pairwise sequence alignment. 12

Q.7 What is gene interaction? Explain epistasis with suitable examples. 12

Q.8 Write note on (Any two) 12

A. Incomplete linkage
B. Artificial gene Synthesis.
C. Biological primary database