

Roll No.

E-319

M. Sc. (First Semester)
EXAMINATION, Dec.-Jan., 2020-21

BOTANY

Paper Second

(Genetics)

Time : Three Hours]

[Maximum Marks : 80

[Minimum Pass Marks : 16

Note : Attempt all Sections as directed.

Section—A

1 each

(Objective/Multiple Choice Questions)

Note : Attempt all questions.

Choose the correct answer :

1. In which of the following, centromere is found on the proximal end ?
 - (a) Telocentric
 - (b) Acrocentric
 - (c) Submetacentric
 - (d) Metacentric

P. T. O.

2. The major non-histone proteins in chromosomes are :
 - (a) Basic
 - (b) Acidic
 - (c) Neutral
 - (d) All of the above
3. Which of the following category of chromatin is inactive for transcription ?
 - (a) Heterochromatin
 - (b) Euchromatin
 - (c) Both (a) and (b)
 - (d) Chromatin
4. In Nucleosome, histone protein is found as :
 - (a) Dimer
 - (b) Tetramer
 - (c) Hexamer
 - (d) Octamer
5. G and R banding are most commonly used for :
 - (a) Karyotyping
 - (b) Deletions
 - (c) Inversions or amplifications
 - (d) All of the above

6. In which of the following, exogenous D. N. A. is taken up by the cell membrane of the recipient cell ?
- (a) Conjugation
 - (b) Transduction
 - (c) Transformation
 - (d) All of the above
7. Transduction requires :
- (a) Virus
 - (b) Lysogenic cycle
 - (c) Lytic cycle
 - (d) All of the above
8. Viral D. N. A. maintains itself in the host as prophage in :
- (a) Temperate phages
 - (b) Virulent phages
 - (c) Both (a) and (b)
 - (d) None of the above
9. The recombination frequency between two genes cannot be greater than :
- (a) 25%
 - (b) 50%
 - (c) 75%
 - (d) 100%

10. The relative distances between positions on a genetic map are calculated by :
- (a) Number of Nucleotides
 - (b) Number of Nucleotide pairs
 - (c) Recombination frequencies
 - (d) All of the above
11. In *E. coli*, which of the following is a helicase-nuclease ?
- (a) Rec B
 - (b) Rec C
 - (c) Rec D
 - (d) All of the above
12. Male *Drosophila* is an example of :
- (a) Complete linkage
 - (b) Incomplete linkage
 - (c) Partial linkage
 - (d) All of the above
13. Crossing over provides proof for :
- (a) The linear arrangement of genes
 - (b) The random arrangement of genes
 - (c) The nonlinear arrangement of genes
 - (d) The clump arrangement of genes

14. Which of the following is a molecular marker ?
- (a) RFLP
 - (b) RAPD
 - (c) SSLP
 - (d) All of the above
15. Which of the following proteins initiates recombinational repair ?
- (a) Rec B
 - (b) Rec C
 - (c) Rec D
 - (d) Rec B, C, D
16. Which of the following is a direct method of gene transfer in plants ?
- (a) Co-integrative vector method
 - (b) Binary vector method
 - (c) Both (a) and (b)
 - (d) Electroporation
17. Ti plasmid is used as a vector because it :
- (a) contains T DNA regions
 - (b) doesn't contain a vir region
 - (c) doesn't contain a con region
 - (d) All of the above

18. Chromosome manipulation is a technique to control :
- (a) Number of haploid set of chromosomes
 - (b) Combination of haploid set of chromosomes
 - (c) Both (a) and (b)
 - (d) None of the above
19. Which of the following methods is used for detecting alien chromatin production ?
- (a) GISH
 - (b) FISH
 - (c) RFLP marker assisted introgression
 - (d) All of the above
20. Which of the following is used for locating the genes in diploids ?
- (a) Monosomics
 - (b) Trisomics
 - (c) Nullisomics
 - (d) All of the above

Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt all questions in 2-3 sentences.

1. What is Chromatin ?
2. What is Aneuploidy ?

3. What is Genetic Recombination ?
4. What do you understand by Gene Mapping ?
5. What are homologous chromosomes ?
6. What do you mean by complete linkage ?
7. What do you understand by Alien chromatin ?
8. Write the names of two examples of whole genome transfer ?

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt all questions in 75 words.

1. Explain Trisomics by giving suitable examples.
2. Write a note on various banding patterns.
3. Write, how lysogeny is different from lytic cycle.
4. What are endogenote, exogenote and merozygote ?
5. Discuss the role of genetic marker.
6. Explain, what are Complete and Incomplete linkage ?
7. What is the purpose of Alien chromatin detection ?
8. Define the chromosome manipulation.

Section—D

5 each

(Long Answer Type Questions)

Note : Attempt all questions in 150 words.

1. Discuss the chromosomal aberration.

Or

Write an account on any *one* specialized type of chromosome.

2. Discuss the phage mediated recombination in bacteria.

Or

Prepare a genetic map by taking a suitable example.

3. Discuss the mechanism of crossing over.

Or

Write a note on Rec A, B, C, D enzymes.

4. Explain the transfer of whole genome by taking a suitable example.

Or

Write an account on chromosome manipulation.