

B.Sc. BIOTECHNOLOGY
Third Semester (Repeat)
GENETICS
(BBT - 11)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any four from Question no. 2 to 8
Question no. 1 is compulsory.

1. Describe Mendel's first and second law of inheritance. (5+5=10)
2. Describe the various mechanisms of sex determinations. (2+3+5=10)
3. What is maternal inheritance? Discuss with an appropriate example. (2+8=10)
4. Describe the stages involve in meiotic crossing over. (10)
5. What is sex linked inheritance? What are the possible outcome of carrier mother and normal father for a particular trait in their son and daughter? (2+8=10)
6. Define the term mutation. Describe the difference between frameshift and nonsense mutation. (2+4+4=10)
7. Discuss the various factors taken into consideration by hardy and Weinberg for formulating their law. (10)
8. Write short notes: (*any two*) (2×5=10)
 - a) Lethal genes
 - b) Holodric genes
 - c) Multiple alleles
 - d) Codominance

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Duration: 20 minutes

Marks – 20

(PART A - Objective Type)

I. Choose the correct answer:

1×20=20

1. A cross in which parent differ in single pair of contrasting character is known as?

- A. Monohybrid cross B. Dihybrid cross
C. Trihybrid cross D. Tetrahybrid cross

2. The recessive character will appear in

- A. F1 C. Both in F1 and F2
B. F2 D. F3

3. The dihybrid test cross is

- A. 9:3:2:1 B. 9:3:3:1
C. 1:1:1:1 D. 9:3:2:2

4. Which of the following is correct with regard to aneuploidy?

- A. Inversion
B. $2n + 1$
C. All aneuploid individuals die before birth.
D. $4n$

5. Those mutations that arise in the absence of known mutagen are known

- A. Induced mutations B. Fused mutations
C. Spontaneous mutations D. None of the above

6. Holandric genes are present on

- A. Salivary gland chromosome B. X Chromosome
C. Y Chromosomes D. Lampbrush chromosomes

7. Mutations which occur in body cells which do not go on to form gametes can be classified as:
- A. Auxotrophic mutations
 - B. Somatic mutations
 - C. Morphological mutations
 - D. Oncogenes
8. All of these obey Mendel's law except:
- A. Linkage
 - B. Independent assortment
 - C. Law of dominance
 - D. All of the above
9. The term linkage was coined by
- A. Mendel
 - B. Morgan
 - C. Correns
 - D. De Vries
10. Variegated colouration of leaves is inherited from female parent. Genes coding this trait are present in
- A. plastids
 - B. cytoplasm
 - C. nucleus
 - D. mitochondria
11. Which one of the following is not a mutagen?
- A. X rays
 - B. Gamma rays
 - C. Hydrogen peroxide
 - D. Carbon dioxide
12. X-linkage was discovered for the first time in
- A. ants
 - B. mice
 - C. chickens
 - D. fruit flies
13. F₂ ratio found in dominant epistasis is
- A. 9:3:4
 - B. 9:6:4
 - C. 15:1
 - D. 12:3:1
14. If a woman is a carrier for the color-blind recessive allele and her husband is normal, what are their chances that a son will be color-blind?
- A. None since the father is normal.
 - B. 50% since the mother is the only carrier.
 - C. 100% because the mother has the gene.
 - D. 25% because the mother is a hybrid.

15. Complete linkage was first observed in
A. Drosophilla B. Maize
C. Mice D. All of the above
16. When a heterozygous offspring is crossed with the homozygous recessive, the cross is called
A. reciprocal cross B. back cross
C. test cross D. criss-cross
17. Crossing over takes place in
A. Pachytene B. Diplotene
C. Diakinesis D. Metaphase
18. The father of genetics is.....
19. An example of multiple allele is.....
20. X0 is:
A. trisomic B. monosomic
C. nullisomic D. none of the above
