

**KHAIRA COLLEGE KHAIRA, BALASORE**

**BOTANY QUESTION BANK**

**THIRD SEMETER**

**CC-7: GENETICS**

**1. The tendency of an offspring to resemble its parent is known as**

1. Variation
2. Heredity
3. Resemblance
4. Inheritance

**2. Who is known as the “Father of Genetics”?**

1. Morgan
2. Mendel
3. Watson
4. Bateson

**3. The alternate form of a gene is**

1. Alternate type
2. Recessive character
3. Dominant character
4. Allele

**4. The genotypic ratio of a monohybrid cross is**

1. 1:2:1
2. 3:1
3. 2:1:1
4. 9:3:3:1

**5. The crossing of F1 to either of the parents is known as**

1. Test cross
2. Back cross
3. F1 cross
4. All of the above

**6. Which of the following statements is true regarding the “law of segregation”?**

1. Law of segregation is the law of purity of genes
2. Alleles separate from each other during gametogenesis
3. Segregation of factors is due to the segregation of chromosomes during meiosis
4. All of the above

**7. Homozygosity and heterozygosity of an individual can be determined by**

1. Back cross
2. Self-fertilization
3. Test cross
4. All of the above

**8. An exception to Mendel’s law is**

1. Independent assortment
2. Linkage
3. Dominance
4. Purity of gametes

**9. Pea plants were used in Mendel’s experiments because**

1. They were cheap
2. They had contrasting characters
3. They were available easily
4. All of the above

**10. The smallest unit of genetic material which produces a phenotypic effect on mutation is**

1. Muton

2. Gene
3. Recon
4. Nucleic acid

**11. Mendel's findings were rediscovered by**

1. Correns
2. De Vries
3. Tschermak
4. All

**12. Alleles are**

1. Alternate forms of genes
2. Linked genes
3. Chromosomes that have crossed over
4. Homologous chromosomes

**13. When the activity of one gene is suppressed by the activity of a non-allelic gene, it is known as**

1. Pseudo-dominance
2. Hypostasis
3. Epistasis
4. Incomplete dominance

**14. Cystic fibrosis is**

1. Sex-linked recessive disorder
2. Autosomal dominant disorder
3. Autosomal recessive disorder
4. Sex-linked dominant disorder

**15. 9:7 ratio in the F2 generation represents**

1. Incomplete dominance
2. Co-dominance
3. Epistasis
4. Complementary interaction

**16. A small amount of lethal mutation is always present in the population due to**

1. Positive selection
2. Negative selection
3. Frequency-dependent selection
4. Mutation-selection balance

**17. If a plant with genotype AaBb is self-fertilized, the probability of getting AABB genotype will be (A and B are not linked)**

1.  $\frac{1}{2}$
2.  $\frac{1}{4}$
3.  $\frac{1}{8}$
4.  $\frac{1}{16}$

**18. How many phenotypes can occur in the human blood group ABO with alleles  $I^A I^B i$ ?**

1. 2
2. 3
3. 4
4. 1

**19. The geometrical device that helps to find out all the possible combinations of male and female gametes is known as**

1. Bateson Square
2. Mendel Square
3. Punnett Square
4. Mendel's Cube

**20. Which term represents a pair of contrasting characters?**

1. Heterozygous
2. Homozygous

- 3. Codominant genes
- 4. Allelomorphs

### Answer Key

|       |       |       |       |       |
|-------|-------|-------|-------|-------|
| 1- 2  | 2- 2  | 3- 4  | 4- 1  | 5- 2  |
| 6- 4  | 7- 3  | 8- 2  | 9- 2  | 10- 1 |
| 11- 4 | 12- 1 | 13- 3 | 14- 3 | 15- 3 |
| 16- 4 | 17- 4 | 18- 3 | 19- 3 | 20- 4 |

I Answer any FIVE of following: (5x3=15)

- 1.What are multiple alleles.
- 2.Define epistasis
- 3.Write a note on pleiotropy
- 4.Differentiate between intersexes and super sexes in Drosophila
- 5.Define hypostasis.
6. Explain flower colour in *Mirabilis Jalapa*.
- 7.Explain eye colour in *Drosophila*.

### PART – B

II Answer any FIVE of following: (5x5=25)

- 1.Illustrate Bridges genic balance theory.
- 2.Explain hormonal control of sex determination.

3. What are non-epistatic interallelic gene interaction give a suitable example.

4. Explain sex differentiation in man.

5. Write short notes on erythroblastosis fetalis.

6. Describe sex determination in melandrium.

7. With suitable example explain incomplete dominant interaction.

#### PART – C

III Answer any ONE of following: (10x1=10)

1. Explain dosage compensation in man.

2. Describe gene interaction in *Lathyrus odoratus*

#### PART – D

IV Answer any ONE of following: (10x1=10)

1. Explain non –allelic gene interaction in fowls.

2. Describe ABO Blood group.

#### PART – A

I Answer any FIVE of following: (5x3=15)

1. Give the salient features of multiple alleles.

2. Define gene interaction.

3. Write a note on incomplete dominance.

4. Differentiate between back cross and test cross.

5. Define recessive epistasis

6. What are intra allelic gene interaction? Give a suitable example.

7. What are free martin.

#### PART – B

II Answer the FIVE of following: (5x5=25)

1. Explain gynandromorphs and its types.
2. Explain of sex determination in Melandrium .
3. With suitable example dominant epistatic gene interaction .
4. Explain sex differentiation in Drosophila.
5. Give a note on environment method of sex determination
6. Write a note on Rh factor.
7. With a suitable example explain hormonal method of sex determination.

#### PART – C

III Answer the ONE of following: (10x1=10)

1. Explain dosage compensation in man.
2. Describe coat color gene interaction in mice.

#### PART – d

IV Answer the ONE of following: (10x1=10)

1. Explain types of sex determination .
2. Describe supplementary gene interaction for comb pattern in fowls.

#### PART – A

I Answer any five of the following: 5X3=15

1. Define genetics and heredity.
2. State law of independent assortment.
3. Give an example of pure lines and inbred lines.
4. Write the formula for variance and standard deviation.
5. Explain merits and demerits of mean.
6. What is epistasis?
7. Briefly explain sex determination mechanism in *Bonelliviridis*

#### PART – B

II Answer any five of the following: 5X5=25

8. Explain theory of inheritance of acquired characters
9. In guinea pigs rough coat R is dominant over smooth coat r and black coat B over b. find the phenotypic and genotypic ratio of the cross.  $rrBB \times RrBb$
10. Explain addition rule of probability with example.
11. What is dominant epistasis? Give a suitable example.
12. Explain genic balance theory of bridges in *Drosophila*
13. Discuss dosage compensation in man.
14. Explain the XX-XY and ZZ-ZW type of sex determination.

#### PART – C

III Answer any two of the following: 2X10=20

15. Describe
  - a) Incomplete dominance



b) Supplementary gene interaction