

## Genetics

1. In a plant cell with  $n=7$ , the diploid cell found to be 13. The reason can be [ ]
1. Presence of one chromosome in 3 copies
  2. Presence of one chromosome in only one copy
  3. Missing of one paternal chromosome.
  4. Addition of one maternal chromosome.
2. Experimental organism in linkage study was [ ]
1. *Pisum*
  2. *Lens culinaris*
  3. *Drosophila*
  4. *Zea*
3. Linkage for the first time discovered by [ ]
1. Bateson and Punnett
  2. Morgan
  3. Mendel
  4. Hugo de Vries
4. True statement regarding reasons for selecting *Pisum sativum* by Mendel for his hybridization experiments [ ]
- A. Though bisexual it is easily cross pollinated
  - B. It can also self fertilized
  - C. It shows seven contrasting characters
  - D. It is perennial and produce many seeds
1. A, B & C
  2. B, C & D
  3. C, A & D
  4. A & B
5. Dominant allele in *Pisum sativum* [ ]
- A. Wrinkled seed
  - B. Grey seed coat
  - C. Axial flowers
  - D. Constricted Pods
1. A & B
  2. B & C
  3. C & D
  4. D & A
6. Yellow colour of the pod and yellow colour of the cotyledons in *Pisum* are respectively [ ]
1. Dominant and Recessive
  2. Dominant and Dominant
  3. Recessive and Dominant
  4. Recessive and Recessive
7. Distribution of constricted pods in a population of *Pisum sativum* [ ]
1. Less than 10%
  2. More than 50%
  3. In 100%
  4. Nearly 25%
8. In *Antirrhinum majus* colour of the flower can be red or white or pink. [ ]
- True statement regarding this is
1. Colour of the flower is controlled by three different genes
  2. Colour is multiple allelic. Red is dominant over pink and white.
  3. Colour is biallelic but do not segregate.
  4. Red and white are true breeds. Red is not completely dominant over white.

9. A cross between true breeds of *Antirrhinum* for flower colour shows genotype and phenotype in  $F_2$  generation respectively (R-red colour: r white colour)

[ ]

1. RR : Rr : rr ---- Red : Red : White
2. RR : Rr : rr ---- Red : Pink : White
3. RR : Rr : rr ---- Pink : Pink : White
4. RR : Rr : rr ---- Red : Pink : Pink

10. In a population of 896 plants %age of genotype AABb is

[ ]

1. 112
2. 249
3. 56
4. 336

11. A plant with heterozygous dominant for both the characters is crossed with homozygous recessive plant

[ ]

- A. The cross is a back cross
- B. The cross is a test cross
- C. In the progeny four different phenotypes appear
- D. The resulting phenotypes are equal in ratio

1. A, B & C
2. A, C & D
3. B & C
4. B, C & D

12. In a cross between a homozygous dominant and homozygous recessive parents

[ ]

- A. All the  $F_1$  generation individuals show similar phenotype
- B. Parental traits reappear in  $F_2$  generation
- C. Equal ratio of reciprocal heterozygote's appear in  $F_2$  generation
- D. Half of the  $F_2$  individuals are homozygous

1. A & B
2. A, B & C
3. A, B & D
4. A, B, C & D

13. In a population of *Pisum sativum* terminal inflorescence is seen in

[ ]

1. Less than axillary inflorescence
2. More than axillary inflorescence
3. Equal with axillary inflorescence
4. No plant shows terminal inflorescence

14. A chromosome with gene arrangement of a b c d e f undergone a mutation and resulted with gene arrangement a b e d c f. The mutation is

[ ]

1. Duplication
2. Inversion
3. Deletion
4. Addition

15. **In linkage** [ ]
- A. Parental types are always more than reciprocal types  
B. Occasionally segregation does not take place  
C. Assortment of genes does not take place in more off springs  
D. By studying linkage, arrangement of genes on chromosomes can be known
1. A & B                      2. A, C & D                      3. A, B & D                      4. B, C & D
16. **A pure tall plant and a dwarf plant of *Pisum* were crossed. In F<sub>1</sub> progeny** [ ]
1. All of them are dwarf                      2. All of them are tall  
3. Half of them are tall                      4. Some of them are tall
17. **In a monohybrid cross, in a population of 524 F<sub>2</sub> generation plants how many are of heterozygous** [ ]
1. 262                      2. 131                      3. 393                      4. 100
18. **In a diploid plant cell with n=8, the chromosomes are found to be 17. This may be due to** [ ]
1. Three copies of one chromosomes                      2. Four copies of one chromosome  
3. One pair of homologues missing                      4. One of homologues missing
19. **One of the scientists who rediscovered Mendel's laws in 1900 is** [ ]
1. Tschermak                      2. Bateson                      3. Morgan                      4. Watson
20. **Assertion (A): All plants of F<sub>1</sub> generation of Mendel's monohybrid cross look alike. Reason (R): Parents are pure homozygotes with one dominant** [ ]
- 1) Both A and R are correct and R is the correct explanation of A.  
2) Both A and R are correct but R is not the correct explanation of A.  
3) A is correct, R is false  
4) A is false, R is correct
21. **In Mendel's dihybrid cross the phenotypic ratio is** [ ]
1. 7:1:1:7                      2. 9:3:3:1                      3. 1:1:1:1                      4. 1:7:7:1

22. **Assertion (A): A test cross can be a back cross** [ ]  
**Reason(R): Sometimes progeny has to be tested for its genotype**  
1) Both A and R are correct and R is the correct explanation of A.  
2) Both A and R are correct but R is not the correct explanation of A.  
3) A is correct, R is false  
4) A is false, R is correct
23. **Genotypic ratio of monohybrid cross in Mendel's experiments** [ ]  
1. 1:2:1                      2. 3:1                      3. 1:1                      4. 4:0
24. **In Mendel's dihybrid cross, genotype that appears in maximum number is** [ ]  
1. YYRR                      2. yyrr                      3. YyRR                      4. YyRr
25. **In Mendel's dihybrid cross what is the probability of F<sub>2</sub> Phenotype of green, round** [ ]  
1. 3/16                      2. 9/16                      3. 1/16                      4. 7/16
26. **Assertion (A): Larger chromosomes generally possess more number of genes than shorter chromosomes**  
**Reason(R): Genes are arranged linearly on the chromosomes.** [ ]  
1) Both A and R are correct and R is the correct explanation of A.  
2) Both A and R are correct but R is not the correct explanation of A.  
3) A is correct, R is false      4) A is false, R is correct
27. **Due to Linkage** [ ]  
1. Genetic variations are seen in populations.  
2. Genetic integrity of organisms are maintained  
3. Evolution will be faster  
4. Always desirable characters appear in population
28. **The distance between genes in a linkage group is represented graphically in** [ ]  
1. Genetic maps                      2. Chromosome maps      3. Karyotype                      4. Ideogram
29. **Mutations are noticed by Hugo de Vries in** [ ]  
1. *Drosophila*                      2. Maize                      3. *Pisum*                      4. Evening primrose

30. **True statement regarding co-dominance in *Lens culinaris* for seed coat is[ ]**
1. All F<sub>1</sub> hybrids show dominant traits
  2. Half of the F<sub>2</sub> generation shows dominant traits.
  3. Half of the F<sub>2</sub> generation shows both traits.
  4. One fourth of F<sub>2</sub> generation shows both traits
31. **In a population of true breeding plants of *Antirrhinum* white flowers are 144. The number of red flowers is [ ]**
1. 144
  2. 288
  3. 432
  4. Nil
32. **Pleiotropy is [ ]**
1. Different genotypes in different environments.
  2. Gene expressing in many phenotypic characters
  3. A single gene product expressing in many varieties
  4. Many genes helping in expression of single phenotype
33. **A mutation in a pair of nucleotides in a DNA is [ ]**
1. Deletion
  2. Duplication
  3. Point mutation
  4. Inversion
34. **A brown eyed man marries a blue eyed woman and they have eight children, all brown eyed. What are the genotypes of children.( Brown eye (B) is dominant over that for blue (b). ) [ ]**
1. BB
  2. Bb
  3. bb
  4. Bb or BB
35. **In garden pea Tallness (T) is dominant over dwarf (t). Green pods (G) are dominant over yellow (g). What will be the appearance of the offspring of the cross TTGg x ttGg [ ]**
1. All tall and green
  2. All tall and yellow
  3. Many tall green and few tall yellow.
  4. Some are dwarf green and some are tall yellow
36. **Number of types of gametes that can be produced by a plant with Aa Bb genotype are [ ]**
1. 2
  2. 3
  3. 4
  4. 1
37. **Chromosome theory proposed by [ ]**
1. Mendel
  2. Sutton and Boveri
  3. Morgan
  4. de Vries
38. **Hugo de Vries observed mutations in [ ]**
1. Evening primrose
  2. Lentil
  3. Snapdragon
  4. Pea

39. Segregation of alleles takes place during

[   ]

- |                             |                         |
|-----------------------------|-------------------------|
| 1. Cell division            | 2. Gamete formation     |
| 3. Crossing over of meiosis | 4. G <sub>2</sub> phase |

40. Assortment of genes is due to

[   ]

- |             |              |              |               |
|-------------|--------------|--------------|---------------|
| 1. Zygotene | 2. Pachytene | 3. Diplotene | 4. Diakinesis |
|-------------|--------------|--------------|---------------|

## Genetics

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 2  | 3  | 1  | 4  | 2  | 3  | 4  | 4  | 2  | 1  | 4  | 4  | 1  | 2  | 2  | 2  | 1  | 1  | 1  | 1  |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 2  | 1  | 1  | 4  | 1  | 1  | 2  | 2  | 4  | 3  | 1  | 3  | 3  | 2  | 3  | 3  | 1  | 1  | 2  | 2  |