



SHIKSHA CLASSES

Sub. : Science
Std. : Xth - CBSE

Question Paper 9. Heredity

Marks : 30
Time : 1 Hour.

SECTION (A)

(Each 1 mark)

Q.1 : What will be the number of chromosomes present in each gamete produced by the plants if the palisade cells of a species of plant contain 28 chromosomes in all?

- a) 56 b) 28 c) 14 d) 4

OR

A cross between a tall plant (TT) and short plant (tt) resulted in progeny that were all tall plants as :

- a) Tallness is the dominant trait. b) Shortness is the dominant trait.
c) Tallness is the recessive trait. d) Height of plant is not governed by gene t or T.

Q.2 : In peas , what is the ratio of pure tall plants to pure short plants in F₂ generation if a pure tall plant is (TT) and short plant is (tt) ?

OR

What is monohybrid cross?

For question number 3 to 5 two statement are given one labeled Assertion (A) and other labeled Reason (R) select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

- a) Both A and R are true and R is correct explanation of the assertion.
b) Both A and R are true but R is not the correct explanation of the assertion.
c) A is true but R is false.
d) A is false but R is true.

Q.3 : **Assertion (A)** : Mendel choose pea plants for his experiment.

Reason (R) : Pea plants were the only plants he could gather for his experiment

Q.4: **Assertion(A)** : According to Darwin, all organisms compete with each other for existence.

Reason (R) : During the struggle for existence there is survival of the fittest.

Q.5: **Assertion(A)** : Traits like tallness and dwarfness in pea plant are inherited independently.

Reason(R): When a homozygous tall pea plant is crossed with dwarf pea plant, medium sized pea plant is obtained in F₁ generation.

Q.6 : What is heredity?

OR

Give the respective scientific terms used for studying:

- i) The mechanism by which variations are created and inherited and,
ii) The development of new type of organisms from the existing ones.

Q.7: Read the following paragraph answer any two questions from (i) to (iii)

(2)

Seema crossed pure breed pea plants having round-yellow seeds with wrinkled green seeds and found that only A-B type of seeds was produced in the F1 generation. When F1 generation pea plants having A-B type of seeds were cross-breed by self-pollination, then in addition to the original round yellow and wrinkled green seeds, two new varieties A-D and C-B types of seeds were also obtained.

- i) What are the A-B type of seeds?
- a) Round -yellow
 - b) Round- green
 - c) Wrinkled- yellow
 - d) Wrinkled- green
- ii) A-D are _____ and C-B are _____ type of seeds.
- a) Round green and wrinkled yellow respectively
 - b) Wrinkled green and round yellow respectively
 - c) Round yellow and wrinkled green respectively
 - d) Wrinkled green and round green respectively
- iii) Which one of these will be produced in maximum number in the F2 generation?
- a) A-D
 - b) A-B
 - c) both (a) and (b)
 - d) None of these

Q.8: If a round, green seeded pea-plant (RRyy) is crossed with a wrinkled yellow seeded pea- plant (rrYY), the seeds produced in F1 generation are

- a) round and green
- b) round and yellow
- c) wrinkled and green
- d) wrinkled and yellow

Q.9: Pure-bred pea plant A is crossed with pure-bred pea plant B. It is found that the plants which look like A do not appear in F1 generation but re-emerge in F2 generation. Which of the plants A and B are tall and dwarf?

- a) A are tall and B are dwarf.
- b) A are tall and B are also tall.
- c) A are dwarf and B are also dwarf
- d) A are dwarf and B are tall

Q.10: A cross between two individuals results in a ratio of 9 : 3 : 3 : 1 for four possible phenotypes of progeny. This is an example of a

- a) Monohybrid cross
- b) Dihybrid cross
- c) Test cross
- d) F1 generation

Q.11: Which of the following characters can be acquired but not inherited?

- a) Colour of skin
- (b) Size of body
- c) Colour of eyes
- d) Texture of hair

Q.12: The _____ is the basic unit of heredity.

- a) Trait
- b) Allele
- c) Gene
- d) Cell

Q.13: The external characters of living organisms called _____.

- a) Phenotype
- b) Genotype
- c) Genetic makeup
- d) Allele

Q.14: An _____ can be defined as the characteristics which are not under genetic control.

- a) acquired traits
- b) Inherited traits
- c) Trait
- d) allele

SECTION (B)

(Each 2 marks)

Q.15 : Among all the chromosomes, what is different about a sex chromosome?

Q.16 : The human beings who look so different from each other in terms of colour, size and looks are said to belong to the same species. Why? Justify your answer.

OR

Distinguish between acquired and inherited traits.

SECTION (C)

(Each 3 marks)

Q.17: Study the given data and answer the questions following the data:

Parental plants cross fertilised and seeds collected F₁ First Generation offsprings F₂ Offsprings of self pollination of F₁ Male parents always bare red flowers, Female parent always had white flowers, 330 seeds sown and observed, All 330 gave red flowers, Out of 44 seeds 33 seeds gave plants with red flowers and 11 seeds gave plants with white flowers.

- i. What is the term for this type of cross?
- ii. What does the data of the column marked F indicate?
- iii. Express the gene type of the (a) parents (b) F₁ progeny and (c) F₂ progeny

OR

In pea plant, round seed is dominant over the wrinkled. If a cross is carried out between these two plants, give answer to the following questions.

- i) Mention the genes for the traits of parents.
- ii) State the trait of F₁ hybrids.
- iii) Write the ratio of F₂ progeny obtained from this cross. What is the name of the cross?

Q.18 : In human beings, probability of getting either a male or female child is 50 : 50. Give a suitable explanation for it.

SECTION (D)

(5 marks)

- Q.19: i) What is genetics?
- ii) Give the common name of the plant on which Mendel performed his experiments.
 - iii) According to Mendel what are the factors?
 - iv) What are genes? Where are the genes located?

OR

a) In a monohybrid cross, pink coloured flowers are dominant over white coloured flowers. If parent plants belong to pure breeding dominant trait and pure breeding recessive trait, what will be the phenotype or morphological feature of F₁-generation? If F₁ plants are self-fertilised, what would be the phenotypic ratio or how many dominant and recessive traits will be produced in the progeny?

b) Mendel choose pea plant for his experiment why?

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