

ATOMIC ENERGY EDUCATION SOCIETY, MUMBAI

WORK SHEET NO. 1

CHAPTER NO: 9 HEREDITY AND EVOLUTION

I Multiple choice questions:

Choose the correct option from the given alternatives:

1. A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. In the progeny all bore violet flowers, but almost half of them are short. This suggests that the genetic make-up of the tall parent can be depicted as:
a. TTWW b. TTww c. TtWW d. TtWw
2. The number of chromosomes present in human beings is
a. 46 b. 36 c. 45 d. 47
3. Males have this combination of sex chromosomes.
a. XX b. XY c. XYY d. XXY
4. The monohybrid cross involves
a. Cross between two individuals with two pairs of contrasting characters
b. Cross between two individuals with any numbers of contrasting characters
c. None of these
d. a or b
5. The scientific name of garden pea plant is
a. *Pisum sativum* b. *Pisum indica* c. *Mangifera indica* d. None of these

II Very short answer type questions:

1. Define variation.
2. All the variations in a species do not have equal chances of survival. Why?
3. Name two human traits which show variation.
4. What is a gene?
5. What is DNA?
6. Why do mice whose tails were surgically removed just after birth for generations, continued to produce mice with tails?
7. What is Monohybrid cross?
8. Who is the father of genetics?
9. Why is the progeny always tall when a tall pea plant is crossed with a short pea plant?
10. Name the branch of science that deals with heredity and variation.

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WORK SHEET NO. 1

Answer Key

I Multiple choice questions:

Choose the correct option from the given alternatives:

1. TtWW
2. 46
3. XY
4. Cross between two individuals with one pair of contrasting characters
5. Pisum sativum

II Very short answer type questions:

1. Variation is defined as the differences in the characters or traits among the individuals of a species.
2. All the variations do not have equal chances of survival as some variations might not be beneficial and would ultimately be eliminated.
3. Colours of eye, Height.
4. Gene is the unit of inheritance. It is the part of chromosomes which controls the appearance of a set of hereditary characters.
5. Deoxyribonucleic Acid is a molecule which carries the hereditary characters or traits in a coded form from one generation to the next in all the organisms.
6. Because cutting of tail is an acquired trait and it is not inherited.
7. The cross between two individuals with one pair of contrasting characters is called Monohybrid cross.
8. Gregor Johann Mendel is the father of genetics.
9. Some genes are dominant and others are recessive. Tallness is a dominant trait and hence the progeny is always tall when crossed with a short plant.
10. Genetics.

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ATOMIC ENERGY EDUCATION SOCIETY, MUMBAI

WORK SHEET NO.2

CHAPTER NO: 9 HEREDITY AND EVOLUTION

I Short answer type questions:

1. Why is variation beneficial for the species, but not necessarily for the individual?
2. Define variation in relation to a species.
3. Why is variation beneficial to the species?
4. Why did Mendel select pea plants for conducting his experiments on inheritance?
5. What are chromosomes? Where are they located in the cell?
6. What is a sex chromosome?
7. The sex of the children is determined by what they inherit from their father and not their mother - Justify.
8. Write any two differences between acquired traits and inherited traits.
9. Why do all gametes formed in human females have an X-chromosome?
10. In human beings, statistical probability of getting either a male or female child is 50:50. Give an suitable explanation.

II Long answers type questions:

1. Explain how sexual reproduction gives rise to more viable variations than asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually?
2. Explain Monohybrid cross in detail with the help of diagrams.
3. Explain Dihybrid cross in detail with the help of diagrams.
4. We cannot pass onto our progeny the experiences and qualifications earned during our life time – Justify the statement giving reasons and examples.
5. It is a matter of chance whether a couple will have a male or female child – Justify this statement by drawing flow chart.

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