

HOTS (Higher Order Thinking Skills)

Q.1. Why do all the gametes formed in human females have X chromosome?

Ans. Human females have two X chromosomes called sex chromosomes. During meiosis at the time of gamete formation, one X chromosome enters each gamete. Hence all the gametes possess an X chromosome.

Q.2. In human beings, the statistical probability of getting either a male or female child is 50:50. Give a suitable explanation.

Ans. The sex of an infant is determined by the type of sex chromosome contributed by the male gamete. Since the ratio of male gametes containing X chromosome and those containing Y chromosome is 50: 50, the statistical probability of male or a female infant is also 50: 50.

Q.3. Why did Mendel choose pea plant for his experiments?

Ans. (a) Easy to grow
(b) Short lifespan
(c) Easily distinguishable characters
(d) Larger size of flower
(e) Self-pollinated

Q. 4. Give reasons for the appearance of new combinations of characters in the F₂ progeny.

Ans. The tall/short and round/wrinkled seed trait are independently inherited.

Q.5. Why is making anti-viral drugs more difficult than making anti-bacterial medicines?

Ans. Since viruses have very few biochemical mechanisms of their own, anti-viral drugs can't be made so easily.

Q.6. Evolution has exhibited a greater stability of molecular structure when compared with morphological structures. Comment on the statement and justify your opinion.

Ans. We see immense diversity in size, form, structure and morphological features in the living world. But at the molecular level these diverse types of organisms exhibit unbelievable similarity. For instance, the basic biomolecules like DNA, RNA, carbohydrates, proteins, etc., exhibit remarkable similarity in all organisms.