QB365 Question Paper Software
10th Standard - Science
Heredity Assertion and reason

Exam Time: 00:20 Hrs

Date: 2025-10-11

Total Marks: 10

Questions:

Assertion and reason

1. **Assertion:** Women has perfect pairs of chromosomes
   Reason: Men has mismatched pair of chromosomes.
   Codes
   (a) If both assertion and reason are true and the reason is correct explanation of assertion.
   (b) If both assertion and reason are true but reason is not a correct explanation of assertion.
   (c) If assertion is true and reason is false.
   (d) If both assertion and reason are false.

2. **Assertion**: A green beetle cannot reproduce with the red beetle.
   Reason: .The beetles of different colours have different number of chromosomes
   Codes
   (a) If both assertion and reason are true and the reason is correct explanation of assertion.
   (b) If both assertion and reason are true but reason is not a correct explanation of assertion.
   (c) If assertion is true and reason is false.
   (d) If both assertion and reason are false.

3. **Assertion**: In humans, height is a trait which shows variation.
   Reason: Some humans are very tall, some have medium height whereas others are short heighted.
   Codes:
   (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.

4. **Assertion:** Traits like tallness and dwarfness in pea plant are inherited independently.
   Reason: When a homozygous tall pea plant is crossed with dwarf pea plant, medium sized pea plant is obtained in F_1 generation.
   Codes:
   (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.

5. **Assertion:** In humans, male (or father) is responsible for sex of the baby which is born.
   Reason: Y chromosomes are present in only male gametes or sperms.
   Codes:
   (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.

6. **Assertion:** A tall plant which always produces tall offsprings is considered heterozygous for height and is represented by genotype (Tt).
Reason: A tall plant which always produces tall offspring is homozygous dominant and will always produce only one type of gamete (T).
Codes:
(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.

7. **Assertion:** A geneticist crossed two plants and got 50% tall and 50% dwarf progenies.
Reason: This cross follows Mendelian law as one of the parent plant might be heterozygous.
Codes:
(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.

8. **Assertion:** A heterozygous tall plant when crossed with homozygous dwarf plant will produce tall and dwarf plants in the ratio of 3 : 1.
Reason: A heterozygous tall plant will produce two types of gametes, i.e., one with T and other with t whereas homozygous dwarf plant produce all gametes with t only.
Codes:
(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.

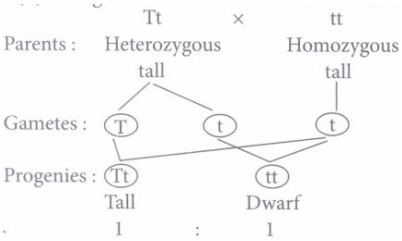
9. **Assertion (A)** Human populations show a great deal of variations in traits.
Reason (R) All variations in a species have equal chances of surviving in the environment in which they live.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true

10. **Assertion (A)** In humans, if gene (B) is responsible for black eyes and gene (b) is responsible for brown eyes, then the colour of eyes of the progeny having gene combination Bb, bb or BB will be black only.
Reason (R) The black colour of the eyes is a dominant trait.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true

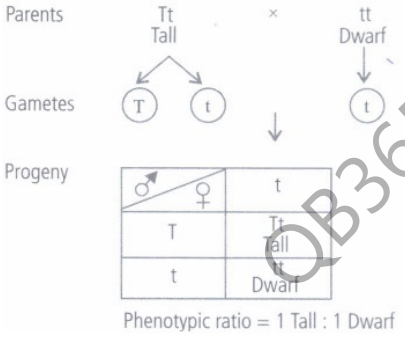
Answers Key:

Assertion and reason

1. (b) If both assertion and reason are true but reason is not a correct explanation of assertion.
2. (d) If both assertion and reason are false.
3. **(b):** Both A and R are true but R is not the correct explanation of the assertion
4. **(c):** Traits like tallness and dwarfness in pea plant are inherited independently and when a homozygous tall pea plant is crossed with a dwarf pea plant, only tall pea plants are obtained in F_1 generation.
5. **(a):** In humans, sex is determined by sex chromosomes. A male has one X and one Y chromosome (XY). A female has two X chromosomes (XX). Male produces two types of sperms, one with X and one with Y whereas female produces only one type of egg with X chromosome.
   When sperm with X chromosome fertilises egg then zygote has both XX chromosomes and develops into female progeny. If sperm with Y chromosome fertilises egg then zygote has XY chromosomes and develop into male progeny.
6. **(d):** A tall plant which always produces tall offspring is homozygous dominant with genotype (TT). It will always produce only one type of gamete (T).
7. **(b):** The given cross can be illustrated as follows:



8. (d): A heterozygous tall plant when crossed with dwarf plant will give following result.



9. (c) A is true, but R is false. R can be corrected as Variations are due to genetic differences between individuals within a population, as well as, due to the environmental factors that can influence the expression of traits.
10. (d) A is false, but R is true. A can be corrected as In humans, if gene (B) is responsible for black eyes and gene (b) is responsible for brown eyes, then the colour of eyes of the progeny having gene combination of Bb, BB will be black and the combination of bb will be responsible for brown eyes.