8. Heredity - Board Exam Questions (1 Mark)

Practice these questions online at pschool.in/science/ncert/g10/chap-8

1 Mark Questions (MCQ)

1) *Sex is determined by different factors in various species. However, in human beings, it is determined genetically. Which amongst the following option(s) is/are correct for human beings?*
(i) Gamete carrying X chromosome from female parent.
(ii) Gamete carrying X chromosome from male parent.
(iii) Gamete carrying Y chromosome from male parent.
(a) (ii) and (iii) (b) (i) only (c) (i) and (iii) (d) (iii) only

2) *The genotype of green stemmed tomato plant is denoted by 'GG' and that of purple stemmed tomato plant as 'gg'. Hybrid of a cross between these two were self-pollinated to obtain F_2 progeny. What will be the ratio of GG, Gg and gg in this F_2 progeny?*
(a) 2 : 1 : 1 (b) 3 : 1 : 0 (c) 1 : 1 : 2 (d) 1 : 2 : 1

3) *Identify the traits that cannot be transmitted from parents to the off-springs: (i) Swimming technique (ii) Blood group (iii) Eye colour (iv) Dancing skills*
(a) (i) and (ii) (b) (i) and (iv) (c) (iii) and (iv) (d) (ii) and (iii)

4) *Two pea plants, one with round green seeds (RRyy) and another with wrinkled yellow (rrYY) seeds were crossed with each other which produced F_1 progeny that have only round yellow (RrYy) seeds. When F_1 plants are self-pollinated, the F_2 progeny will have which new combination of characters, as compared to the parents: (i) Round, yellow (ii) Round, green (iii) Wrinkled, yellow (iv) Wrinkled, green*
(a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iv) (d) (i) and (iii)

5) *When a human egg is fertilized by a sperm having 'Y' chromosome, the zygote has the following combination of chromosomes:*
(a) 44 + XX (b) 22 + XX (c) 44 + XY (d) 22 + XY

6) *If pea plants with round and green seeds (RRyy) are crossed with pea plants having wrinkled and yellow seeds (rrYY), the seeds developed by the plants of F_1 generation will be:*
(a) 50% round and green (b) 75% wrinkled and green
(c) 100% round and yellow (d) 75% wrinkled and yellow

7) *When a pure-tall pea plant is crossed with a pure-dwarf pea plant, the percentage of tall pea plants in F_1 and F_2 generation pea plants will be respectively:*
(a) 100% ; 25% (b) 100% ; 50% (c) 100% ; 75% (d) 100% ; 100%

8) *A tall pea plant with round seeds (TTRR) is crossed with a short pea plant with wrinkled seeds (ttrr). The F_1 generation will be*
(a) 25% tall with round seeds (b) 50% tall with wrinkled seeds
(c) 75% tall with wrinkled seeds (d) 100% tall with round seeds

9) *In a cross between black furred rabbit (B) and white furred rabbit (b), all offspring were found to have black fur. What can be inferred about the genetic makeup of the parent rabbits?*
(a) BB × bb (b) Bb × Bb (c) Bb × bb (d) bb × bb

10) *Consider the following statements:*
(i) The sex of a child is determined by what it inherits from the mother.
(ii) The sex of a child is determined by what it inherits from the father.
(iii) The probability of having a male child is more than that of a female child.
(iv) The sex of a child is determined at the time of fertilisation when male and female gametes fuse to form a zygote.
The correct statements are:
(a) (i) and (iii) (b) (ii) and (iv) (c) (iii) and (iv) (d) (i), (iii) and (iv)

11) *Chromosomes:*
(i) carry hereditary information from parents to the next generation.
(ii) are thread like structures located inside the nucleus of an animal cell.
(iii) always exist in pairs in human reproductive cells.
(iv) are involved in the process of cell division.
The correct statements are:
(a) (i) and (ii) (b) (iii) and (iv) (c) (i), (ii) and (iv) (d) (i) and (iv)

12) *A cross made between two pea plants produces 50% tall and 50% short pea plants. The gene combination of the parental pea plants must be*
(a) Tt and Tt (b) TT and Tt (c) Tt and tt (d) TT and tt

13) *In an experiment to study independent inheritance of two separate traits: shape and colour of seeds, the ratio of the different combinations in F_2 progeny would be*
(a) 1 : 3 (b) 1 : 2 : 1 (c) 9 : 3 : 3 : 1 (d) 9 : 1 : 1 : 3

14) *A cross between two tall pea plants resulted in offsprings having a few dwarf plants. The gene-combination of the parental plants must be*
(a) Tt and Tt (b) Tt and tt (c) TT and tt (d) TT and Tt

15) *A zygote is formed by the fusion of a male gamete and a female gamete. The number of chromosomes in the zygote of a human is:*
(a) 23 (b) 44 (c) 46 (d) 92

16) *In snails individuals can begin life as male and depending on environmental conditions they can become female as they grow. This is because*
(a) male snails have dominant genetic makeup
(b) female snails have dominant genetic makeup
(c) expression of sex chromosomes can change in a snail's life time
(d) sex is not genetically determined in snails

17) *The statement that correctly describes the characteristic(s) of a gene is:*
(a) In individuals of a given species, a specific gene is located on a particular chromosome
(b) A gene is not the information source for making proteins in the cell
(c) Each chromosome has only one gene located all along its length
(d) All the inherited traits in human beings are not controlled by genes

18) *When an 'X' bearing sperm fertilises the egg, the resulting zygote has the following combination of chromosomes:*
(a) 44 + XX (b) 44 + XY (c) 22 + XX (d) 22 + XY

19) *A cross between pea plant with white flowers (vv) and pea plant with violet flowers (VV) resulted in F_2 progeny in which ratio of violet (VV) and white (vv) flowers will be:*
(a) 1 : 1 (b) 2 : 1 (c) 3 : 1 (d) 1 : 3

20) *Consider the following two statements:*
(i) The trait that expresses itself in F_1 generation.
(ii) The trait that keeps on passing from one generation to another.
The appropriate terms for the statements (i) and (ii) respectively are:
(a) Recessive trait, Dominant trait (b) Dominant trait, Recessive trait
(c) Dominant trait, Inherited trait (d) Recessive trait, Inherited trait

21) *In an experiment with pea plants, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plant to pure short plants in F_2 generation will be*
(a) 1 : 3 (b) 3 : 1 (c) 1 : 1 (d) 2 : 1

22) *Height of a plant is regulated by:*
(a) DNA which is directly influenced by growth hormone
(b) Genes which regulate the proteins directly
(c) Growth hormones under the influence of the enzymes coded by a gene

(d) Growth hormones directly under the influence a gene

Assertion and Reason

1) *Assertion (A): Bacteria that can withstand heat have better chances of survival in a heat wave.*
Reason (R): Accumulation of variations in a species increases the chances of its survival in changing environment.

2) *Assertion (A): A human child bears all the basic features of human beings.*
Reason (R): It looks exactly like its parents, showing very little variations.

3) *Assertion (A): A mango seed will germinate to form a mango tree.*
Reason (R): Heredity determines the process by which traits and characteristics are reliably inherited from parents to offspring.

4) *Assertion (A): In reptiles, the temperature at which the fertilized eggs are kept decides the sex of the offsprings.*
Reason (R): Sex is not genetically determined in some animals.

5) *Assertion (A): Tallness of a pea plant is controlled by an enzyme.*
Reason (R): The gene for that enzyme makes proteins which help the plant to be tall.

6) *Assertion (A): Human female has a perfect pair of sex chromosome.*
Reason (R): Sex chromosome contributed by the human male in the zygote decides the sex of a child.

7) *Assertion (A): Sex of the children will be determined by what they inherit from their mother.*
Reason (R): Women have XX sex chromosomes.

8) *Assertion (A): Genes inherited from the parents decide the sex of a child.*
Reason (R): X chromosome in a male child is inherited from his father.

9) *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.

10) *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.

11) *Assertion (A): Height in pea plants is controlled by efficiency of enzymes and is thus genetically controlled.*
Reason (R): Cellular DNA is the information source for making proteins in the cell.