Heredity and Evolution

CHAPTER 9

TRY YOURSELF

ANSWERS

1. Variations are the structural, functional or behavioural changes from the normal characters developed in the living organisms.

2. Due to the presence of variations, few individuals in a population may survive under extreme conditions such as change in temperature, water level, etc. Similarly, due to drastic change in niche, population except few individuals with variations can be wiped out. This shows that variations favour survival of a species.

3. The cross that is made to study the inheritance of only one pair of contrasting character is known as monohybrid cross.

4. According to the law of dominance, in a hybrid individual one character is controlled by two dissimilar unit factors. The one unit factor which expresses itself and prevents the expression of other factor is called dominant factor and other which is unexpressed is called recessive factor.

5. This represents the dihybrid cross.

Parents: RRYY (Round yellow) X rryy (Wrinkled green)

Gametes: RY, ry

F_1 generation : RrYy (Round yellow)

selfing

F_2 generation :

♂ / ♀	RY	rY	Ry	ry
RY	RRYY	RrYY	RRYy	RrYy
rY	RrYY	rrYY	RrYy	rrYy
Ry	RRYy	RrYy	RRyy	Rryy
ry	RrYy	rrYy	Rryy	rryy

Round yellow : Wrinkled yellow : Round green : Wrinkled green

9 : 3 : 3 : 1

Dihybrid cross proves Mendel's second Law "law of independent assortment". According to this law, genes of different characters located in different pairs of chromosomes segregate independently of one another during gamete formation.

6. In humans, males are heterogametic and thus produces two types of gametes *i.e.*, X and Y.

7. The chances of having a male child in humans is 50%, as the human male produces two types of sperms (22 + X and 22 + Y) in equal proportion. The female produces only one type of ova; 22 + X. If sperm (22 + X) fuses with ova, it results in female progeny and fusion of ova with sperm (22 + Y) results in male progeny.

8. Stanley L.Miller and Harold C.Urey in 1953 gave the experimental evidences of modern theory of origin of life.

9. According to cosmozoic theory, the life came on earth from some heavenly bodies in the form of spores and seeds.

10. Natural selection is the process by which organisms are well adapted to the environment, survive and reproduce and pass their successful characters to the next generation. For example, in a beetle population, if a green colour variant appears in a red beetle population, which can easily camouflage in leaves and thus can escape from being eaten by crows. The red beetles will be eaten up but the green beetles will survive and reproduce further.

11. The two phenomenon that work towards evolution are natural selection and genetic drift.

12. Gradual and instantaneous speciation.

13. The ecological or ethological barrier that induce the reproductive isolation in a subpopulation of a species are major causes of sympatric evolution.

14. The presence of hair on body, wisdom tooth, nictitating membrane, vermiform appendix, etc., are examples of vestigial organs in humans.

15. The numerical taxonomy is a branch of biology that deals with the evolutionary relationship of different species on the basis of shared characters. In this taxonomy, each and every character is given equal importance and weightage.

16. The organs that appear similar and perform similar functions but are different in their basic structural and developmental origin are called analogous organs, *e.g.*, wings of an insect, bat and a bird.

17. The ethnic groups of humans are Negroid (African pygmies and bushman), Caucasian (Italian, English), Eastern (Chinese, Japanese, Eskimos) and Mongoloid.

18. The most intelligent human is *Homo sapiens sapiens*.

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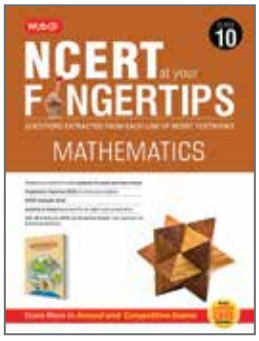

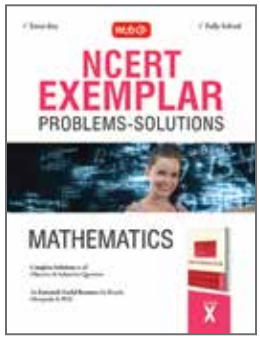

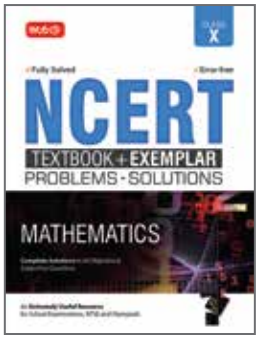

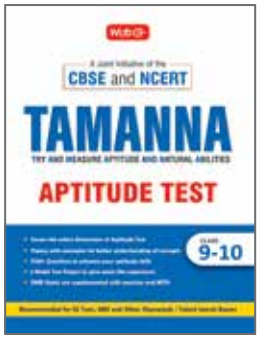

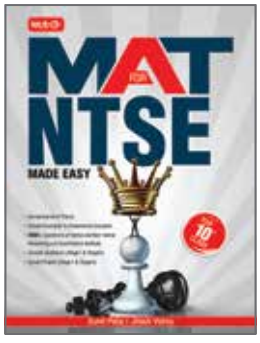

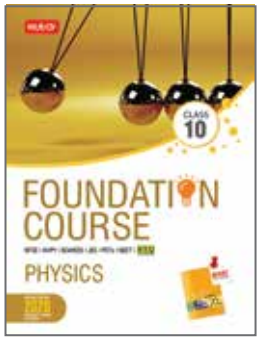

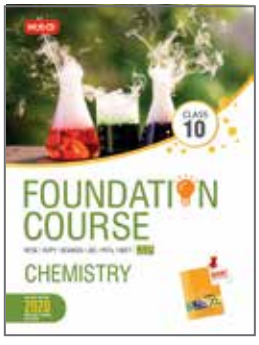

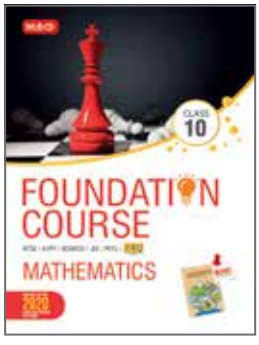

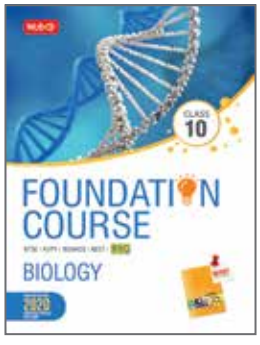

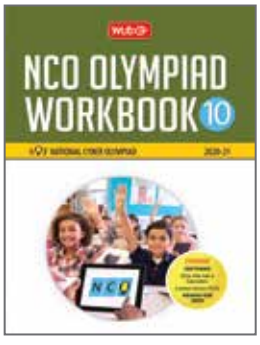

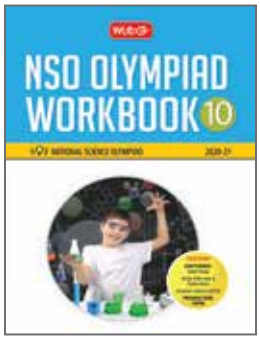

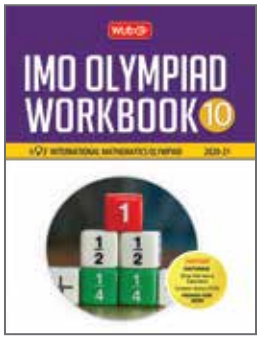

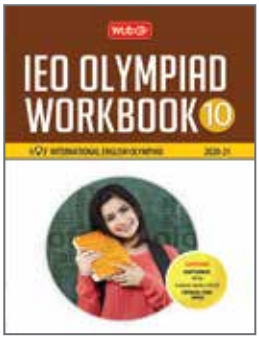

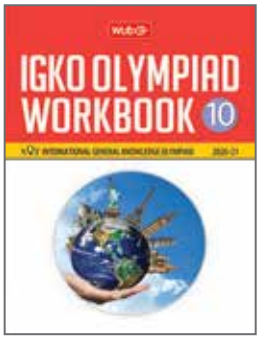

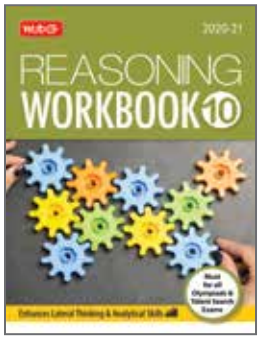

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