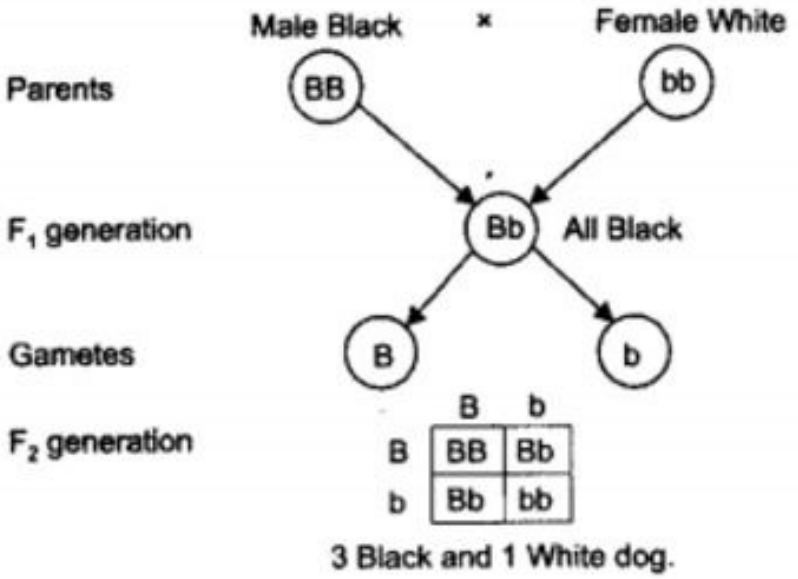
Question 7. Outline a project which alms to find the dominant coat colour in dogs.
Answer: A homozygous black (RB) male dog and a homozygous white (bb) female dog is taken and given to mate and produce offspring in F1 generation. If black colour is dominant out of every 4 dogs, 3 will be black and if white colour is dominant 3 out of 4 dogs will be white.



Question 8. Explain the importance of fossils in deciding evolutionary relationships.
Answer: Fossils and their study is useful to know about the species which are no longer alive. They provide evidence and missing links between two classes. They are helpful in forming a sequence of organisms in the pathway of evolution. Thus, fossils have importance in deciding evolutionary relationships.

Question 9. What evidence do we have for the origin of life from inanimate matter?
Answer: Stanley L. Miller and Harold C. Urey provided evidence regarding origin of life from inanimate matter. They assembled an atmosphere similar to that existed on early earth. The atmosphere had molecules like ammonia, methane, hydrogen sulphide and water, but no oxygen. The mixture was maintained at a temperature just below 100○C and sparks were passed through the mixture of gases. At the end of a week, 15% carbon from methane had been converted to simple compounds of carbon like aminoacids which make up protein molecules. So, life arose afresh on earth.

Question 10. Explain how sexual reproduction gives rise to more viable variations that asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually ?
Answer: Variations occurring during sexual reproduction may be due to:
(i) Separation of homologous chromosomes (by chance only) during gamete formation.
(ii) Crossing over (recombination) of homologous chromosomes.

(iii) Fertilisation of gametes to form zygote.
(iv) Errors during DNA copying or mutations. In asexually reproducing organisms only errors during DNA copying or mutations cause variations.
Since the extent of variations is much larger in sexually reproducing organisms, therefore, the chances of evolution is also much in sexually reproducing These variations enable the organisms to adapt themselves to the changing conditions and also help to face the struggle for Over the time, they and rise to new species.

Question 11. How is the equal genetic contribution of male and female parents ensured in the progeny?
Answer: Genetically organisms are of types
(i) Haploid: They have single set of chromosomes, where each chromosome is represented singly. As the chromosomes are the bearer of genes so haploids have single set of genes. A single gene determines the expression of character.
(ii) Diploid: 'They have two sets Of homologous chromosomes, where the chromosome occur in pair, one maternal contributed by the mother through her ovum and the second Of the pair is contributed by the male parent through his sperm. The resultant cell zygote produces by the fusion of male and female gametes have two sets of chromosomes— each set contributed' by each parent. In diploids a character is controlled by two genes/factors. Both the father and mother contribute practically equal amount of genetic material to the child. It means that each trait can be influenced by both paternal and maternal DNA.

Question 12. Only variations that confer an advantage to an individual organism will survive in a population. Do you agree with this statement ? Why or why not ?
Answer: No, many of the times the variations are not advantageous to an individual organism but still survive in a population, e.g., take the case of free ear lobe and attached ear lobe. Most of the other variations not only give survival advantage to an individual but also contribute to genetic drift. Thus, we can say that most of the variations lead to better adaptation of an organism to the changing environment. In this way, it gives survival advantage to that organism and will also survive in the coming population.

********** END **********