



**INDIAN SCHOOL DARSAIT
DEPARTMENT OF SCIENCE**



Subject : BIOLOGY Topic : Heredity and Evolution

Date of Worksheet :
31-10-2018

Resource Person: Mrs. S. SUBHAJA NANDAKUMAR

Name of the Student _____

Class & Division : X Div _ Roll Number : ____

- 1) Compare dominant and recessive trait. 1
- 2) What is DNA? What is the role of DNA on inheritance. 1
- 3) Name an animal which rely on environment cues for sex determination. What does this indicate? 1
- 4) State the process involved in chromosome number restoration in zygote. 1
- 5) Give one difference between artificial selection and natural selection. 1
- 6) Give the difference between monohybrid and dihybrid cross. 2
- 7) Why are the small numbers of surviving tigers a cause of worry from the points of view of genetics? 2
- 8) If a trait A exist in 10% of a population of an asexually reproducing species and a trait B exists in 60% of the same population, which trait is likely to have arisen earlier? 2
- 9) Will geographical isolation be a major factor in the speciation of a self-pollinating plant species? Why or why not? 2
- 10) Evolution should not be equated with progress. Why? 2
- 11) 'Humans and chimpanzees both have evolved from a common ancestor'. Justify. 2
- 12) Why are human beings who look so different from each other in terms of size, colour and looks said to belong to the same species? 2
- 13) Define chromosomes? "Genes and chromosomes have similar behaviour". Justify 2
- 14) A man with blood group A marries a woman with group O and their daughter has blood group O. Is this information enough to tell you which of the traits-blood group A or blood group O is dominant? 2
- 15) What is evolution and brief the evolutionary significance of the fossil archaeopteryx? State three characteristic to shows that the birds are very closely related to dinosaurs. 3
- 16) Explain the mechanism of sex determination in man. 3
- 17) Differentiate between acquired traits and the inherited traits. 3
- 18) Variation is useful for the survival of species overtime but the variants have unequal chances of survival. Explain the statement. 3

- 19) Evolution is a process in which simple life forms change into complex life forms by gradual changes. But, there is a difference between chemical and organic evolution. Differentiate by giving three points. 3
- 20) In Pea plants, if gene 'P' gives for Axillary flowers and gene 'p' gives terminal flowers, what will be the colour of eyes of the persons having the following combination of genes: 3
a) Pp b) pp c) PP
- 21) There are a number of ways by which the genes enter a population. Explain briefly the three ways. 3
- 22) A study found that children with light coloured eye are likely to have parents with light-coloured eyes. On this basis, can we say anything about whether the light eye colour trait is dominant or recessive? Why or why not? 3
- 23) "Two areas of study namely 'evolution' and 'classification' are interlinked". Justify. 3
- 24) State the three laws of inheritance. How do Mendel's experiment show that traits are inherited independently? 3
- 25) With the help of an example comment on the following statement: "A trait may be inherited, but may not be expressed". 3
- 26) In one of his experiments with pea plants Mendel observed that when a pure tall pea plant is crossed with a pure dwarf pea plant, in the first generation, F1 only tall plants appear. 3
(a) What happens to the traits of the dwarf plants in this case?
(b) When the F1 generation plants were self-fertilised, he observed that in the plants of second generation, F2 both tall plants and dwarf plants were present. Why it happened? Explain briefly.
- 27) List three factors that provide evidences in favour of evolution in organisms and state the role of each in brief. 3
- 28) State and describe in brief any 3 main factors responsible for the rise of new species. Which of these cannot be a major factor in the speciation of a self-pollinating plant species? Explain. 3
- 29) State which of the following are homologous and which are analogous: 3
(a) Wings of bat and an insect
(b) Forelimbs of frog, a reptile, a bird and a human.
(c) Flippers of whales and fins of fishes
Give reasons for your answers
- 30) What is meant by speciation? List four factors that could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species? Give reason to justify your answer. Explain in brief the role of natural selection and genetic drift in this process. 5
- 31) What are fossils? How are they formed? List two methods of determining the age of fossils. Explain in brief the importance of fossils in deciding the evolutionary relationships. 5
- 32) (a) Why did Mendel choose garden pea for his experiments? Write two reasons. 5
(b) List two contrasting visible characters of garden pea Mendel used for his experiment.
(c) Explain in brief how Mendel interpreted his results to show that the traits may be dominant or recessive.