CLASS 10 BIOLOGY PREVIOUS YEAR QUESTIONS
HEREDITY & EVOLUTION

Question 1. All the variations in a species do not have equal chances of survival. Why? (Foreign 2014)

Question 2. "Only variations that confer an advantage to an individual organism will survive in a population." Justify this statement. (Foreign 2011)

Question 3. Assertion (A) : The sex of a child in human beings will be determined by the type of chromosome he/she inherits from the father.
Reason (R) : A child who inherits 'X' chromosome from his father would be a girl (XX), while a child who inherits a 'Y' chromosome from the father would be a boy (XY).
(a) Both (A) and (R) are true and (R) is the correct explanation of the assertion (A).
(b) Both (A) and (R) are true, but (R) is not the correct explanation of the assertion (A).
(c) (A) is true, but (R) is, false.
(d) (A) is false, but (R) is true. (2020)

Question 4. A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plants bearing white flowers. What will be the result in F_1 progeny? (2018)

Question 5. Name the information source for making proteins in the cells. (Delhi 2014)

Question 6. What is a gene? (AI 2014)

Question 7. What is heredity? (AI 2014)

Question 8. Why is the progeny always tall when a tall pea plant is crossed with a short pea plant? (Foreign 2014)

Question 9. Write a difference between inherited traits and acquired traits giving one example of each. (Delhi 2013C)

Question 10. (a) Why did Mendel carry out an experiment to study inheritance of two traits in garden pea?
(b) What were his findings with respect to inheritance of traits in F_1 and F_2 generation?
(c) State the ratio obtained in the F_2 generation in the above mentioned experiment. (2020)
(b) For example, a cross between round yellow and wrinkled green parents.

Question 11. A green stemmed rose plant denoted by GG and a brown stemmed rose plant denoted by gg are allowed to undergo a cross with each other.
(a) List your observations regarding :
(i) Colour of stem in their F_1 progeny
(ii) Percentage of brown stemmed plants in F_2 progeny if plants are self pollinated.
(iii) Ratio of GG and Gg in the F_2 progeny.
(b) Based on the findings of this cross, what conclusion can be drawn? (2020)

(ii) F_1 progeny on self pollination:

Question 12. (a) Why is the F_1 progeny always of tall plants when a tall plant is crossed with a short pea plant?
(b) How is F_2 progeny obtained by self-pollination of F_1 progeny different from F_1 progeny? Give reason for this observation.

(c) State a conclusion that can be drawn on the basis of this observation. (2020)

Question 13.
Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants? Write the ratio he obtained in F_2 generation plants. (Delhi 2019)

Question 14.
How did Mendels experiments show that different traits are inherited independently? Explain. (Delhi 2017)

Question 15. How did Mendel explain that it is possible that a trait is inherited but not expressed in an organism? (AI 2017)

Question 16. 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, F_1 only tall plants appear.
(a) What happens to the traits of the dwarf plants in this case?
(b) When the F, generation plants were self- fertilised, he observed that in the plants of second generation, F_2 both tall plants and dwarf plants were present. Why it happened? Explain briefly. (Delhi 2016)

Question 17. How did Mendel interpret his result to show that traits may be dominant or recessive? Describe briefly. (Delhi 2016)

Question 18. In a monohybrid cross between tall pea plants (TT) and short pea plants (tt) a scientist obtained only tall pea plants (Tt) in the F_1 generation. However, on selfing the F_1 generation pea plants, he obtained both tall and short plants in F_2 generation. On the basis of above observations with other angiosperms also, can the scientist arrive at a law? If yes, explain the law. If not, give justification for your Answer. (Delhi 2016)

Question 19. How do Mendel's experiment show that traits are inherited independently? (AI 2016)

Question 20. With the help of an example justify the following statement: "A trait may be inherited, but may not be expressed." (AI 2016)

Question 21. List two differences in tabular form between dominant trait and recessive traits. What percentage/proportion of the plants in the F2 generation/progeny were round, in Mendel's cross between round and wrinkled pea plants? (Foreign 2016)

Question 22. Explain Mendel's experiment with peas on inheritance of characters considering only one visible contrasting character. (Foreign 2016, 2014)

Question 23. "It is a matter of chance whether a couple will have a male or a female child." Justify this statement by drawing a flow chart. (Foreign 2015)

Question 24. "It is possible that a trait is inherited but may not be expressed." Give a suitable example to justify this statement. (Foreign 2015)

Question 25. A cross was made between pure breeding pea plants, one with round and green seeds and the other with wrinkled and yellow seeds.
(a) Write the phenotype of F_1 progeny. Give reason for your **Answer**.
(b) Write the different types of F_2 progeny obtained along with their ratio when F_1 progeny was selfed. (Delhi 2014, Delhi 2013C)

Question 26. (a) Mendel crossed tall pea plants with dwarf pea plants in his experiment. Write his observations giving reasons on the F_1 and F_2 generations.
(b) List any two contrasting characters other than height that Mendel used in his experiments in pea plants. (Delhi 2014)

Question 27. "A trait may be inherited, but may not be expressed". Justify this statement with the help of a suitable example. (AI 2014)

Question 28. "The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it". Justify this statement with the help of flow chart showing determination of sex of a new born. (Delhi 2013)

Question 29. A blue colour flower plant denoted by BB is cross-bred with that of white colour flower plant denoted by bb.
(a) State the colour of flower you would expect in their F_1 generation plants.
(b) What must be the percentage of white flower plants in F_2 generation if flowers of F_1 plants are self-pollinated?
(c) State the expected ratio of the genotypes BB and Bb in the F_2 progeny. (Delhi 2012)

Question 30. If we cross pure-breed tall (dominant) pea plant with pure-breed dwarf (recessive) pea plant we will get pea plants of F_1 generation.
If we now self-cross the pea plant of F_1 generation, then we obtain pea plants of F_2 generation.
(a) What do the plants of F_1 generation look like?
(b) State the ratio of tall plants to dwarf plants in F_2 generation.
(c) State the type of plants not found in F_1 generation but appeared in F_2 generation, mentioning the reason for the same. (AI 2012)

Question 31. With the help of a flow chart explain in brief how the sex of a newborn is genetically determined in human beings. Which of the two parents, the mother or the father, is responsible for determination of sex of a child? (Foreign 2012)
Answer: Refer to **Answer** 23.

Question 32. How is the sex of the child fixed during the fertilisation, step in human beings? Explain. (Foreign 2011)

Question 33.How do Mendels experiments show that
(a) traits may be dominant or recessive?
(b) inheritance of two traits is independent of each other? (Delhi 2017)

Question 34.
(a) Why did Mendel choose garden pea for his experiments ? Write two reasons.
(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. (Foreign 2016)

Question 35. Give the respective scientific terms used for studying:
(a) the mechanism by which variations are created and inherited and
(b) the development of new type of organisms from the existing ones. (Delhi 2014)

Question 36. Write the contribution of Charles Darwin in the field of evolution. (Delhi 2014)

Question 37. Why do mice whose tails were surgically removed just after birth for generations, continue to produce mice with tails? (Foreign 2014)

Question 38. List two differences between acquired traits and inherited traits by giving an example of

each. (Delhi 2019)

Question 39. Define genetics. Why is decrease in the number of surviving tigers a cause of concern from the point of view of genetics? Explain briefly. (AI 2019)

Question 40. Distinguish between the acquired traits and the, inherited traits in tabular form, giving one example for each. (Delhi 2017)
Answer: Refer to **Answer** 38.

Question 41. With the help of two suitable examples, explain why certain experiences and traits earned by people during their lifetime are not passed on to their next generations. When can such traits be passed on? (AI 2017)

Question 42. List three distinguishing features, in tabular form, between acquired traits and the inherited traits. (Delhi 2016)

Question 43. "We cannot pass on to our progeny the experience and qualifications earned during our lifetime." Justify the statement giving reason and examples. (Delhi 2015)

Question 44. List in tabular form, two distinguishing features between the acquired traits and the inherited traits with one example of each. (Delhi 2015, AI 2012)

Question 45. Distinguish between inherited and acquired traits by giving one example of each. Give reason why the traits acquired during the lifetime of an individual are not inherited. (Foreign 2014)

Question 46. With the help of suitable examples, explain why certain traits cannot be passed on to the next generation? What are such traits called? (AI 2014)

Question 47. Tabulate two distinguishing features between acquired traits and inherited traits with one example of each. (Delhi 2013)

Question 48. "An individual cannot pass on to its progeny the experiences of its life-time". Justify the statement with the help of an example and also give reason for the same. (Foreign 2012)

Question 49. Describe any three ways in which individuals with a particular trait may increase in population. (AI 2011)

Question 50. (a) What is the law of dominance of traits? Explain with an example.
(b) Why are the traits acquired during the life time of an individual not inherited? Explain. (2020)

EVOLUTION QUESTIONS (DEDUCTED FROM CBSE SYLLABUS)

Question 51. What is speciation?

Question 52. What is speciation? Explain in brief the role of natural selection and genetic drift in this process. (Foreign 2016)

Question 53. What is speciation? List four factors responsible for speciation. (Delhi 2015)

Question 54. Explain the following:
(a) Speciation
(b) Natural selection. (Al 2015, Delhi 2011)

Question 55. List three main factors responsible for the speciation and briefly describe each one of them. (AI 2014)

Question 56. List three main factors responsible for the rise of a new species giving a brief description about each. (Foreign 2014)

Question 57.
What is meant by the term speciation? List four factors which could lead to speciation. (Delhi 2012)

Question 58. (a) Classify the following as homologous or analogous pairs:
(i) Broccoli and cabbage
(ii) Ginger and radish
(iii) Forelimbs of birds and lizard
(iv) Wings of a bat and wings of a bird
(b) State the main feature that categorises a given pair of organs as homologous or analogous. (2020)

Question 59. "During the course of evolution, organs or features may be adapted for new functions". Explain this fact by choosing an appropriate example. (2020)

Question 60. Explain with the help of an example each, how the following provide evidences in favour of evolution:
(a) Homologous organs
(b) Analogous organs
(c) Fossils (Delhi 2017, AI 2015, Delhi 2011)

Question 61. "Evolution and classification of organisms are interlinked". Give reasons to justify this statement. (AI 2017)

Question 62. "Two areas of study namely evolution' and classification are interlinked". Justify this statement. (AI 2016)

Question 63. List three factors that provide evidences in favour of evolution in organisms and state the role of each in brief. (Foreign 2016)

Question 64. (a) Planaria, insects, octopus and vertebrates all have eyes. Can we group eyes of these animals together to establish a common evolutionary origin? Justify your **Answer**.
(b) "Birds have evolved from reptiles". State evidence to prove the statement. (Delhi 2015)

Question 65. (a) Cite the evidence on the basis of which it is concluded that birds have evolved from reptiles.
(b) Insects, octopus, Planaria and vertebrates also possess eyes. Can these animals be grouped together on the basis of the eyes they possess. Why or why not ? Give reason to justify your **Answer**. (Foreign 2015)

Question 66. (a) Give the evidence that the birds have evolved from reptiles.
(b) Insects, octopus, Planaria and vertebrates possess eyes. Can we group these animals together on the basis of eyes that they possess? Justify your **Answer** giving reason. (Delhi 2014)

Question 67. What are fossils? How do they help in the study of evolution? (Delhi 2013C, AI 2011)

Question 68. Distinguish between homologous organs and analogous organs. In which category would you place wings of a bird and wings of a bat? Justify your **Answer** giving a suitable reason. (Delhi 2012)

Question 69. How are fossils formed? Describe, in brief, two methods of determining the age of fossils. (AI 2012)

Question 70. (a) We see eyes in Planaria, insects, octopus and vertebrates. Can eyes be grouped together in case of the above-mentioned animals to establish a common evolutionary origin? Why?
(b) State one evidence to prove that birds have evolved from reptiles. (Foreign 2012)

Question 71. Explain how evolutionary relationship can be traced by the study of homologous organs. (Foreign 2011)

Question 72. (a) How do the following provide evidences in favour of evolution in organisms? Explain with an example for each.
(i) Homologous organs
(ii) Analogous organs
(iii) Fossils
(b) Explain two methods to determine the age of fossils. (AI 2019)

Question 73. Define evolution. How does it occur?
Describe how fossils provide us evidence in support of evolution. (AI 2016)

Question 74. 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. (Foreign 2016)

Question 75. Define the term evolution. "Evolution cannot be equated with progress". Justify this statement. (2020)

Question 76. Define the term "evolution". Evolution should not be equated with progress." Give reason to justify this statement. (Foreign 2014)