

EVOLUTION QUESTIONS

1. Apart from similar gill slits in the embryos of different chordates, what other features do these embryos have in common?
2. Name some vestigial organs found in the human body. Of what functional organs are they the remains?
3. What is meant by homologous structures? Give an example.
4. Problems with blood transfusions and organ transplants are related to protein differences between donor and recipient. How do the proteins of different species differ?
5. What types of adaptations are there? Give an example of each.
6. In most populations, every individual does not have the same chance of survival. Why is this?
7. A biologist studying a population of plants found that the roots of certain individuals grew more rapidly than others. How might this affect the chances of survival?
8. (a) What are fossils? Give examples.
(b) Where are fossils usually found?
(c) Why do relatively few individual organisms become fossilised?
(d) Explain how palaeontologists deduce the structure, diet, movement type, habitat, and social group, if any, of organisms that have fossilised.
9. What are some of the factors that interfere with our obtaining a complete and unbiased picture of life in the past from a study of the fossil record?
10. If you were looking for fossils of present-day organisms in 50 million years time, from what kinds of habitat would you expect most fossils to come, and which phyla would you expect to be best represented?
11. Suggest a hypothesis to explain why angiosperms became more abundant in the fossil record after certain orders of insects and birds had appeared.
12. Explain how fossils are dated.
13. What are the different methods of isolation? Give examples.
14. What is meant by the Continental Drift Theory?
15. Why are marsupials and monotremes widespread in Australia and almost non-existent elsewhere?

16. (a) Explain how continental drift, the ice ages, a volcanic eruption and drifting sand blocking an estuary could lead to the isolation of populations.
(b) Suggest 2 other events that could lead to isolation.
17. Explain how a difference in frogs' calls can isolate two populations.
18. Some scientists assume that the rate of change on the earth has been gradual (Gradualism or Uniformitarianism). However the fossil record seems to indicate that the evolution of organisms occurs at infrequent intervals of time (Punctuated Evolution).
What could have caused these sporadic evolutionary changes?
19. What factors cause Variation?
20. Explain why asexually-reproducing organisms evolve more slowly than sexually-reproducing organisms.
21. What effect would a shorter life-span have on evolution?
22. What effects do Migration, Isolation and Adaptation have on a species?
23. What is meant by Natural Selection? Explain using an example.
24. Define Species.
25. Why is the phrase "survival of the fittest" not a good description of natural selection?
26. If the characteristics of species are able to change, why do some species become extinct?
27. Many organisms in a population die before they can reproduce. What effect will this have on the gene pool of future generations?
28. When antibiotics were first introduced into hospitals many years ago to control infections caused by *Staphylococcus aureus* ("golden staph"), patients recovered quickly. Nowadays however, one sometimes hears of patients being in hospital for long periods before a staphylococcal infection heals. Explain how bacteria become resistant to antibiotics.
29. Explain the change in gene frequencies of the peppered moth in Britain in the 1950's.

30. Measles has been a common childhood disease among Europeans for many centuries. However during several epidemics in Australia after European settlement, many aborigines died, but few Europeans died. Today aboriginal people are less affected by measles than they were 200 years ago. Why is this?

31. Define: (a) divergent evolution (b) convergent evolution (c) parallel evolution.

32. Do you think Australia should maintain stocks of such organisms as "wild" wheat in order to maintain a gene bank? Why, or why not?