

Biology 541 – Exam #1 Review Questions / Topics

Note that items not covered on this list may be on the exam. In general, consider the questions as "guides" to specific topics that I consider important. So if a question asks for some examples of a particular topic, you should also **UNDERSTAND** the topic in addition to the examples.

Most of the questions in this review are straightforward. **DON'T ASSUME THAT THE FORMAT OF THESE QUESTIONS IS ALL THAT IS NEEDED FOR THE EXAM.** Be ready to **synthesize** information and think in broader terms.

1. Why does such a large proportion of known species of fish live in freshwater, when inland waters account for a miniscule amount of the total volume of water on earth?
2. What are the major habitats and ocean zones of fishes and the environmental conditions in those habitats?
3. What morphology / adaptations do fishes possess that can identify a fish with a particular habitat?
4. What are the functions of the external features of fishes (e.g., lateral line, scales, fins)?
5. What environmental factors are important in the distribution of fishes?
6. What is the meaning of a phylogenetic classification?
7. What are the three main groups of fishes and their corresponding taxonomic names?
8. What are the modes of reproduction in fishes?
9. Describe the different periods in the development of fishes.
10. Know functional design of fishes.
11. What are the forces important in the locomotion of fishes?
12. How do fishes sense the environment?
13. What are the three main body forms of fishes?
14. What is acclimation and acclimatization?
15. What is involved in the feeding sequence of fishes and how do fishes select prey?
16. What are 'open vs. 'closed' populations of fishes?
17. What are the different mating systems in fishes and alternative reproductive strategies?
18. What is the ultimate goal (evolutionarily) of a fish or any other organism?
19. What is a Reynolds number and how is it calculated?
20. What are the trophic categories of fishes?
21. What morphological adaptations help fishes feed?
22. What determines the dietary composition of fishes?
23. What is an energy budget?
24. What are the types of metabolism; how is metabolism affected by the environment?
25. What does Ivlev's Electivity Index and similar indices measure?
26. What is optimal foraging theory and its assumptions. Why is optimal foraging theory not always realistic?
27. How might foraging vs. predation risk interact in patch use by a fish?
28. What are the reproductive strategies exhibited by fishes?
29. What kind of conditions would tend to promote semelparity vs. iteroparity?
30. What factors relate to mate choice in male reproductive success?
31. Contrast parental care with broadcast spawning.
32. Complete the following from Dr.Suess: one fish, two fish, red fish _____?
33. How are food resources allocated energetically in a fish (bioenergetics)?