

2006 AP[®] STATISTICS FREE-RESPONSE QUESTIONS

5. A biologist is interested in studying the effect of growth-enhancing nutrients and different salinity (salt) levels in water on the growth of shrimps. The biologist has ordered a large shipment of young tiger shrimps from a supply house for use in the study. The experiment is to be conducted in a laboratory where 10 tiger shrimps are placed randomly into each of 12 similar tanks in a controlled environment. The biologist is planning to use 3 different growth-enhancing nutrients (A, B, and C) and two different salinity levels (low and high).
- (a) List the treatments that the biologist plans to use in this experiment.
 - (b) Using the treatments listed in part (a), describe a completely randomized design that will allow the biologist to compare the shrimps' growth after 3 weeks.
 - (c) Give one statistical advantage to having only tiger shrimps in the experiment. Explain why this is an advantage.
 - (d) Give one statistical disadvantage to having only tiger shrimps in the experiment. Explain why this is a disadvantage.