

海洋生物学 (1 / 2)

(注意) 問題 [1] [2] [3] [4] はそれぞれ別の答案用紙に解答すること。

(解答は英語・日本語のどちらでもよい [英語/ラテン語と指示してある場合以外]。文法などの間違いは採点に影響しない)

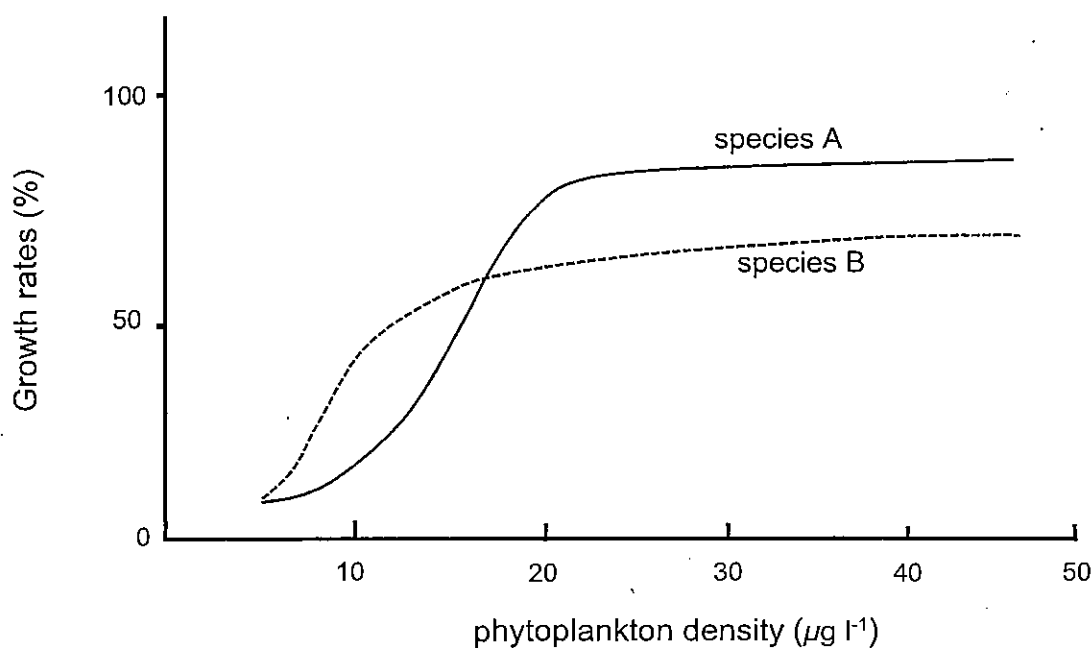
[1] Choose TWO topics from the following five and discuss. (total: 30 points)

- (1) Relation between seasonal thermocline formation and phytoplankton production
- (2) Morphological and ecological adaptation of mangrove plants
- (3) Problems of heavy metal contamination in benthos in coastal waters
- (4) Global distribution of corals
- (5) Morphological diversity of reef fishes

[2] The figure shows the results of feeding experiments in which two sessile filter-feeding gastropod species A and B were kept separately in experimental aquaria at different densities of phytoplankton food. Growth rates are expressed as proportional values in terms of weight increase per unit time. Answer the questions that follow.

(total: 30 points)

- (1) Explain (and give your interpretation of) the patterns observed here. (15 points)
- (2) Consider and discuss the possible situation(s) in which these two species might coexist under natural conditions. (15 points)



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- [3] Organisms inhabiting intertidal habitats often demonstrate unique characteristics in terms of ecology, behaviour, morphology and physiology to cope with harsh environmental conditions. Answer the following questions. (total: 20 points)
- (1) What are “harsh environmental conditions”? Explain succinctly one by one. (10 points)
 - (2) If the conditions are harsh, why do some organisms still occur in the intertidal? Discuss. (10 points)
- [4] Two species of echinoderm grazers are known to occur in a tropical seagrass seabed dominated by two species of seagrasses. In order to clarify the interspecific relations between the two echinoderm species, devise and explain a field/experimental study, paying particular attention to (a) the hypothesis that you propose to test with the experiment, (b) possible results and their interpretations. (20 points)