

海洋生物学 (1 / 1)

(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)

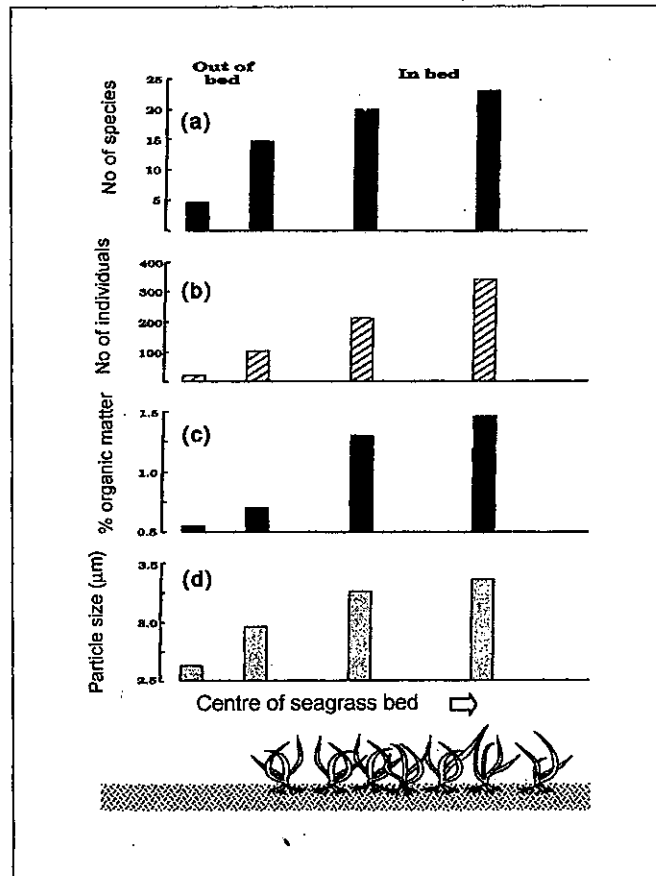
1] Choose TWO topics from the following six and discuss. (total: 26 points)

- (1) Zonation in the rocky intertidal
- (2) Symbiotic relations in benthic organisms
- (3) Effects of tidal fluctuations in estuarine habitats
- (4) Vertical distribution of zooplankton
- (5) Spatial variation in phytoplankton production
- (6) Relationship between fish and benthos in an aquatic system of your choice

2] Answer the following questions concerning seagrass ecosystems. (total: 50 points)

- (1) Explain the taxonomic difference between seagrasses and marine algae. (5 points)
- (2) Explain the geographical distribution of seagrasses. (5 points)

The figure to the right shows the results of a field study in which benthic animals and sediments were sampled quantitatively at four points in and out of a seagrass bed. Panels (a) and (b) refer to benthos and (c) and (d) to sediments.



- (3) Discuss the results in the figure. (10 points)
- (4) Plan and explain an experiment to test a hypothesis of your choice to account for the observed results. (20 points)
- (5) Discuss the ecological importance of seagrass beds in shallow marine systems, based on these results. (10 points)

3] The figure shows a simplified food web on a rocky shore with the arrows indicating the directions of energy flow. (total: 24 points)

- (1) If "A" is a starfish predator,
 - (a) which symbol represents a limpet? (3 points)
 - (b) which symbol represents a mussel? (3 points)
 - (c) what kind of organism is "B"? (3 points)
- (2) Calculate the 'food web connectance' which is defined as the proportion of the number of observed links against the total number of possible links. Note that "detritus", "plankton" and "benthic algae" as well as organisms "A" to "F" should be included in this calculation. (5 points)
- (3) Discuss the possible consequences of "A" becoming extinct. (10 points)

