平成 28 年度システム生命科学府生物関係 3 講座（生命医科学、分子生命科学、生命理学）
専門科目・筆記試験　問題

海洋生物学（１／２）

（注意）全ての問題を 1 枚の答案用紙に解答すること。裏も使用してよい。
解答は英語、日本語どちらでも可とする。

（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 one of the following topics and discuss. (20 points)

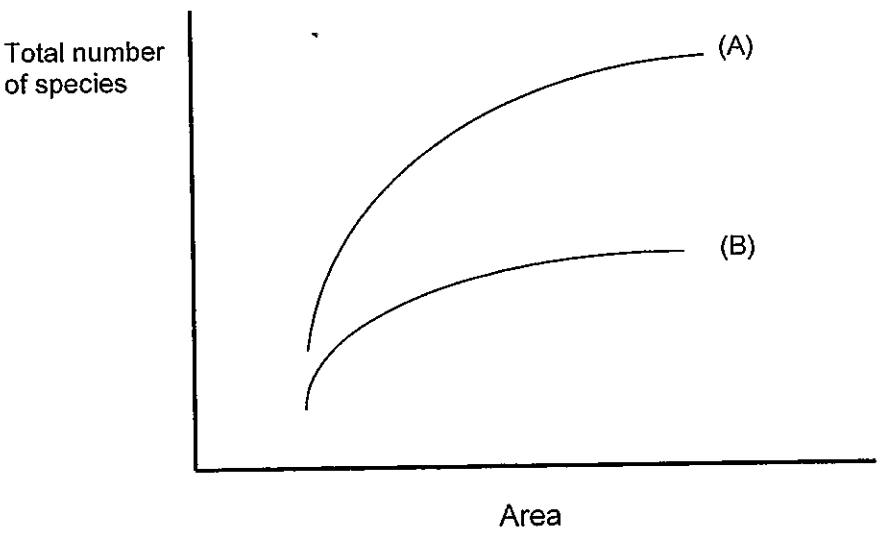
(1) Ecological importance of upwelling phenomena
(2) Factors that affect the growth of kelps
(3) Morphological and ecological characteristics of benthos inhabiting soft sediments
(4) Vertical distribution of animals in the intertidal
(5) Overexploitation of marine fishes

[2] Answer the following three questions. (total: 25 points)

(1) Explain the ecological linkage between benthos and plankton in the sea. (10 points)
(2) "Marine crustaceans are all mobile, not sessile, organisms". Discuss whether this statement is true or not. (5 points)
(3) Explain briefly what thermal stratification is. (10 points)

[3] Two curves in the diagram below demonstrate the relationship between the number of coral species recorded and the area of sampling in the Indo-Pacific and the Caribbean (Atlantic) reefs. Answer the following questions. (total: 30 points)

(1) Which curve represents the Indo-Pacific/the Caribbean? Give the reasons. (5 points)
(2) Corals belong to which phylum of animals? Answer in Latin or English. (5 points)
(3) Explain briefly how corals obtain nutrients. (5 points)
(4) What is "coral bleaching"? Explain briefly how it occurs. (5 points)
(5) Discuss the possible benefits of obtaining this kind of information for marine conservation programs. (10 points)



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[4] Two species of deposit-feeding gastropods occur on temperate intertidal shores and are known to share the same food resources, detrital particles on the substrate surface. In order to clarify the possible competitive relationship between these two species, devise and explain an experiment, either in the field or in the laboratory, paying particular attention to (a) the hypothesis you propose to test with the experiment, (b) possible results and their interpretations. (25 points)