

20% (1) As a brand new hot-shot environmentally conscious college grad, you've been hired by a small dredging company to prepare an impact statement concerning the chemical effects of dumping $100,000\text{m}^3$ of anoxic estuarine sediments 5km off the coast in 100m of water. What do you expect might be the effects of this dredging and dumping operation on the chemistry of the water in the dredge site and dumping area involved? You may mention how the chemical changes might ultimately affect the biology as well.

20% (2) How does a typhoon affect biological productivity in the coastal oceans? What about the open oceans? Explain in detail.

20% (3) 請說明為何在大陸棚上利用 N-15 測量新生產力(New Productivity)時，測值經常高出大陸棚之輸出生產力(Export Productivity)。

20% (4) What factors need to be considered when one uses radioisotopes to date marine sediments?

20% (5) Explain the following terms: (a) IMBER, (b) KEEP, (c) Redfield ratio, and (d) apparent oxygen utilization.