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87.202 - PRINCIPLES OF EARTH & ENVIRONMENTAL SYSTEMS II
STUDY QUESTIONS AND PROBLEMS VIII

1. Why are large, hard-boned components of biogenic origin commonplace on the surface of sediments considered low in biogenic materials? What does this tell you about the sedimentation rate?
2. Why does the mean particle size of oceanic sediments tend to decrease as we move seaward from the land?
3. List and briefly describe five ways in which terrigenous materials can be transported to the open ocean.
4. What is the major factor controlling the accumulation of opaline material on the sea floor?
5. Why do glacial-marine deposits show a wide range of grain sizes?

6. Distinguish between carbonate compensation depth and the lysocline. What is the significance of the CCD?

7. Name and describe several types of stratigraphic markers.

8. Name and describe several ways in which you could determine the absolute age of a seafloor sediment.

9. If a suspended particle has a diameter of 0.02 cm, how far can it be transported by a horizontal current having a uniform speed of 25 cm s^{-1} when the depth of water is 100 m and the density of the particle is 2.82 g cm^{-3} . The dynamic viscosity of water is 0.0135 poise (dyne s cm^{-2}). (ans: 85,034 cm)

10. Sediment collected at a depth of 50 cm by a deep sea core contains foram shells with a $^{14}\text{C}/\text{C}$ ratio of 12.5% that for sediment from a depth of 10 cm. Calculate the apparent sedimentation rate. (ans: 2.34 cm/1000 y)

11. The following results were obtained using uranium series measurements at various depths in a deep sea core. The units are disintegrations per minute per gram (dpm g^{-1}) of sediment.

Depth (cm)	U-238	U-235	Th-230
0	1.3	1.4	65.6
20	1.5	1.6	33.6
40	1.4	1.3	17.4
60	1.5	1.3	9.6
80	1.5	1.5	5.7
100	1.2	1.3	3.5
120	1.4	1.5	2.4

What is the sedimentation rate? If the Pa-231 activity is 6.9 dpm/g at 10 cm, what should it be at 50 cm? (ans: Sedimentation rate = 0.28 cm/1000 y; Pa-231 activity = 0.323 dpm/g)