Restrict your responses **only** to the space available. Answer directly and fully - don't beat around the bush. Point values for each question are given in parentheses. Of course, any notes you are allowed in answering the exam. All page 25-29 references refer to Wanda's notebook. Write your name at the bottom of each page.

1 (10) Leaf temperatures of *Encelia farinosa* are lower than those of other neighboring shrub species and also lower than the surrounding air temperature. Please explain why leaf temperatures in *Encelia farinosa* are below those of air temperature, using the data on page 25 as supporting information.

2 (5) Based on the data presented on page 25, what is the relationship between water stress and leaf absorptance?

3 (12) On the road trip described on page 26, climate diagrams for four different locations are presented. What biome or vegetation type was observed at each of the locations?

Site #1 _____ Site #2 _____

Site #3 _____ Site #4 _____

4a (2) On the road trip described on page 26, would you expect to find C_4 photosynthesis plants at any of these locations?

Yes _____ No _____

4b (4) Which location(s)? _____

4c (4) Justify your answer(s) above.

5 Data to answer this series of sub-questions come from page 27.

5a (2) What term describes the relationship between net photosynthesis and PFD? _____

5b (2) What is the leaf photosynthetic rate value at a PFD of 2000 μmol m^{-2} s^{-1}? _____

5c (10) What changes are taking place that result in the ci/ca ratio remaining essentially constant at PFD values between 400-2000 μmol m^{-2} s^{-1}?

5d (6) Over what range of PFD values is the photosynthesis rate both increasing and linearly related to PFD?

5e (6) BONUS Over the PFD range answered in Question 5c, what term is used to describe this response when photosynthetic rate is linearly related to PFD? What is the slope of that relationship (show your math)?

6 Data to this series of sub-questions come from page 28.

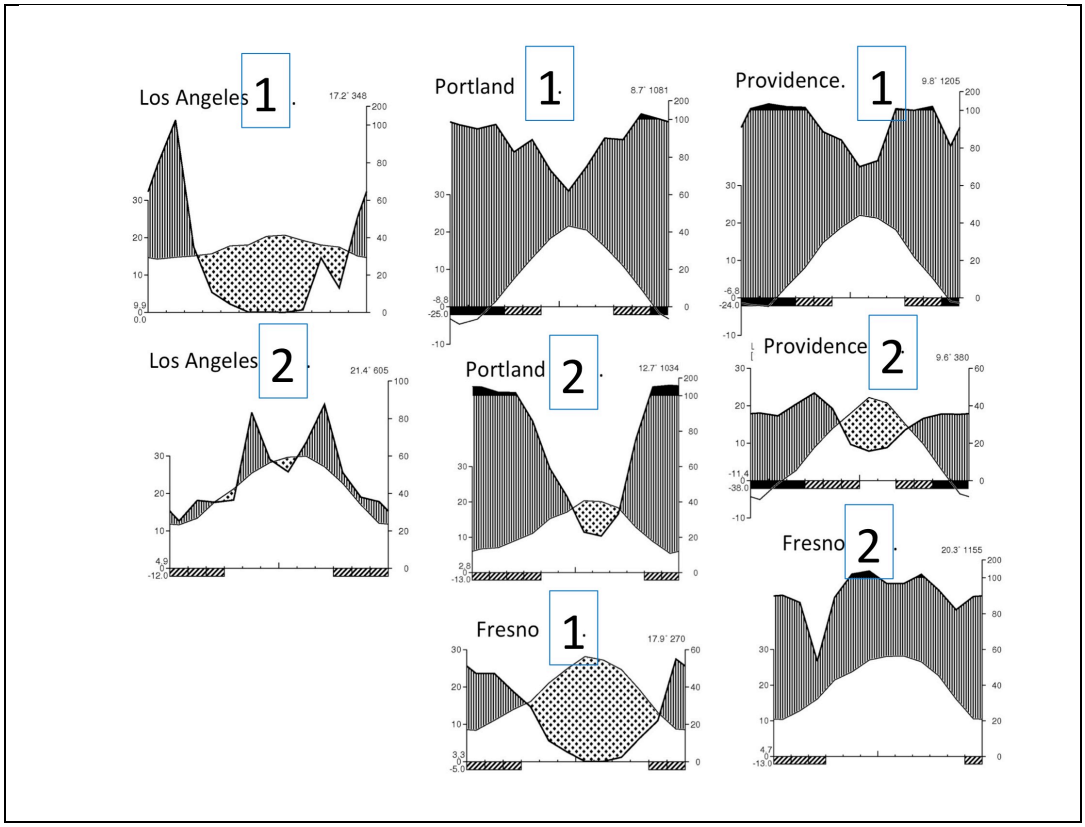
6a (4) Which of the four locations (if any) are Mediterranean climate sites?

6b (6) Based on the information in the climate diagrams, please describe the expected natural vegetation at Hilton Head and Melo.

6c (10) Please explain why the precipitation patterns are so different on east versus west locations on the same

continents, even though all sites are at the same latitudinal distance from the equator?

7 Data to this series of sub-questions come from page 29 (climate diagrams below)



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7a (10) For the two Los Angeles cities presented, what vegetation is expected to naturally occur in

Los Angeles 1 _____

Los Angeles 2 _____

7b (10) Providence 2 is Providence, Utah and its natural vegetation is quite different from the vegetation

expected to naturally occur in the region surrounding Providence 1. What vegetation type is expected to naturally occur in the area surrounding Providence 1 and justify your answer.

7c (5) Both Portland 2 and Fresno 2 receive sufficient precipitation that the perennial vegetation is typically not very water stressed. Yet the two locations have significant temperature differences. Based on your understanding, which location is more likely to have a coniferous forest instead of a deciduous angiosperm forest? Justify your answer.