

# ARCH 4/591

## QUIZ #2

Environmental Control Systems I

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1. The position of the sun in the sky can be determined by:

- a. **azimuth and altitude**
- b. azimuth and declination
- c. zenith and altitude
- d. 90-latitude

2. In Eugene, Oregon during the Fall equinox, the sun sets

- a. 60 degrees west of south
- b. **90 degrees west of south**
- c. 60 degrees east of south
- d. 90 degrees east of south

In Eugene, Oregon during the Fall equinox, the sun rises: **90 degrees east of south**

In Eugene, Oregon during the Spring equinox, the sun sets: **90 degrees west of south**

3. Calculate the number of hours between Savannah, Georgia (81°W longitude) and Honolulu, Hawaii (157°W longitude). *show work*

- a. 3 hours
- b. 4 hours
- c. **5 hours**      **157-81= 76. 76 degrees / 15 degrees per hour = 5 hours**
- d. 7 hours

St. John's, Newfoundland, Canada (52°W longitude) and Honolulu, HI (157°W longitude). **7 hours**  
Vancouver, BC, Canada (123°W longitude) and Washington, DC (77°W longitude). **3 hours**

4. In Olgyay's Design with Climate, chapter VII on Solar Control, the primary reason for providing shading devices for buildings is to:

- a. **intercept solar gain and save on air-conditioning since windows account for the greatest amount of heat entering the building, therefore shading**
- b. promote air movement and enhance privacy
- c. provide solar heat gain and radiation on window and wall surfaces for specific times of the year
- d. enhance the texture, materiality, and articulation of building facades in hot climates.

5. Name 3 difference(s) between **clock time** and **solar time**

- **location within the time zone -- distance from the reference longitude of the time zone.**
- **daylight savings time -- accounts for 1 hour change**
- **equation of time -- accounts for the earth's speed around the sun.**