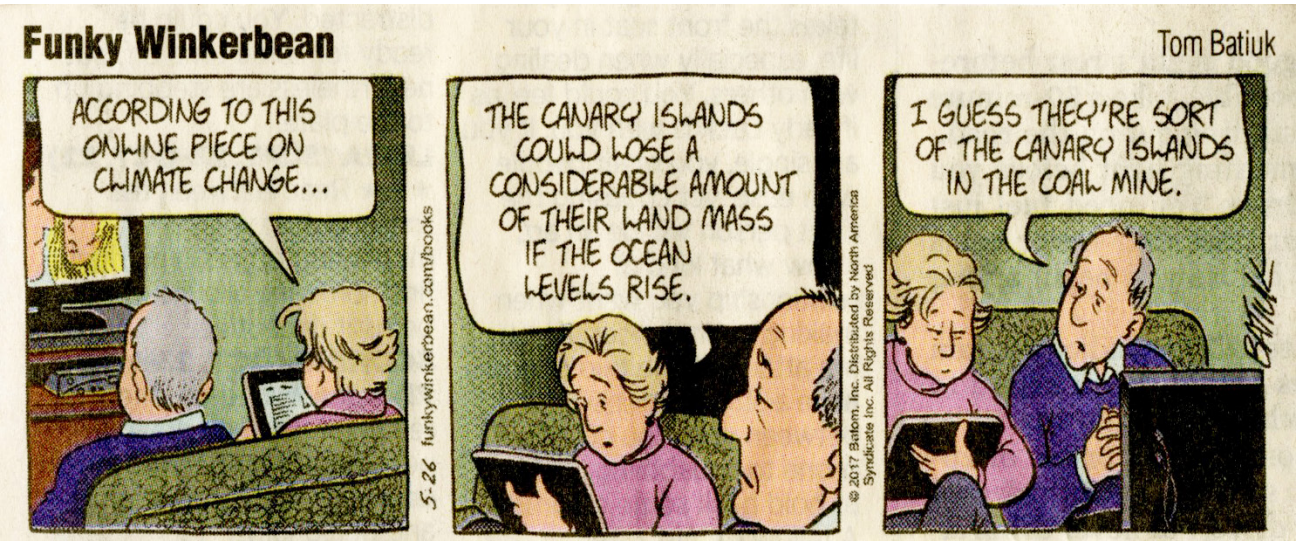
Arch 463
ECS
Fall 2018 Name_____

Midterm I

30 Multiple Choice Questions

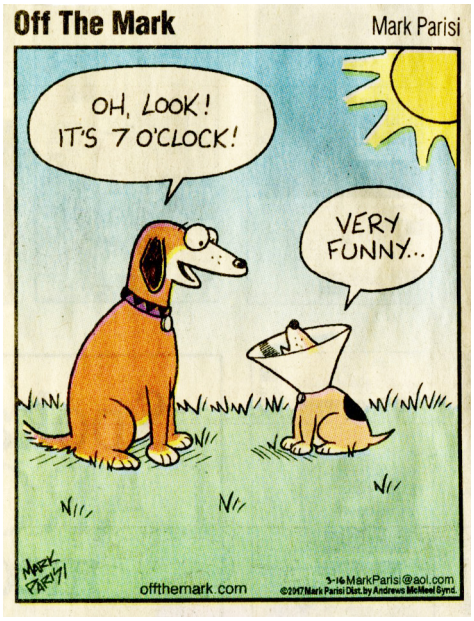


1. Since 1901 the warming climate has most affected
    A. northern polar regions
    B. northern temperate regions
    C. equatorial regions
    D. all of the above equally

2. The Paris Agreement on mitigating climate change
    A. was signed on to by 195 nations
    B. excluded the US
    C. requires reductions by 2020
    D. all of the above

3. During a single site visit you can
    A. determine prevailing wind direction
    B. discover micro-climates
    C. plot potential sun path obstructions
    D. all of the above except A

4. The Climate Consultant is especially helpful in site analysis because
    A. you can discover seasonal differences in wind flow and direction
    B. it prioritizes effective passive strategies
    C. you can determine which months are winter/heating months
    D. all of the above



5. Stonehenge is an evocative example of
   A. the only place you get "straight lines of light"
   B. a discovery by Galileo in the 17th century
   C. ancient understanding of the sun's path
   D. an early sun dial

6. On a sunny day in the Moscow, ID, the north facade of buildings experience direct sun
   A. on the summer solstice
   B. all summer
   C. from spring equinox until fall equinox
   D. none of the above

7. A mechanically heated office that maintains a steady 72°F all winter
   A. will make everybody comfortable all the time
   B. acts as a stimulating thermal oasis
   C. is more comfortable for men than for women
   D. none of the above

8. To remain comfortable at cool temperatures a person must
   A. gain heat from the environment
   B. slowly lose heat to the environment
   C. shiver
   D. none of the above

9. Prevailing winds are caused by
   A. air convection and the earth's rotation
   B. nearby bodies of water
   C. seasonal heat lag
   D. all of the above

10. Which of the following can act as an environmental barrier?
   A. a door
   B. a window
   C. a roof
   D. all of the above

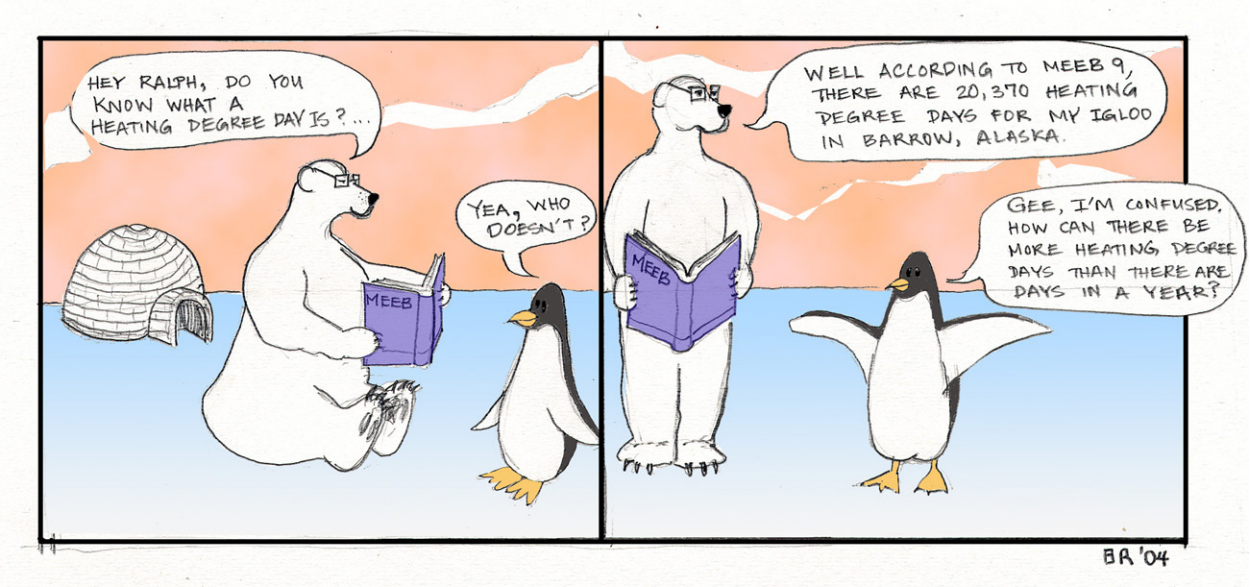
11. After a calm period at sunset a residence on the shore of Lake Michigan in Illinois can count on
   A. a prevailing southwest wind
   B. nighttime on-shore breezes
   C. nighttime off-shore breezes
   D. none of the above

12. An effective wind break in a valley could consist of
    A. a row of coniferous trees
    B. a swath of trees and shrubs
    C. a low stone wall
    D. all of the above

13. Sequim, WA, is a climatic anomaly because
    A. it's in the wind shadow of the Olympic Mountains
    B. it gets more rain than Seattle
    C. it benefits from the "leak" in the Cascade Range
    D. none of the above

14. The most vegetated quadrant of Steptoe Butte is
    A. northwest
    B. northeast
    C. southeast
    D. southwest

15. For performance modeling of a complex building project that is currently in the schematic design phase it would be wise to use
    A. TMY 2 weather data
    B. TMY 3 weather data
    C. morphed 2020 weather data
    D. morphed 2080 weather data

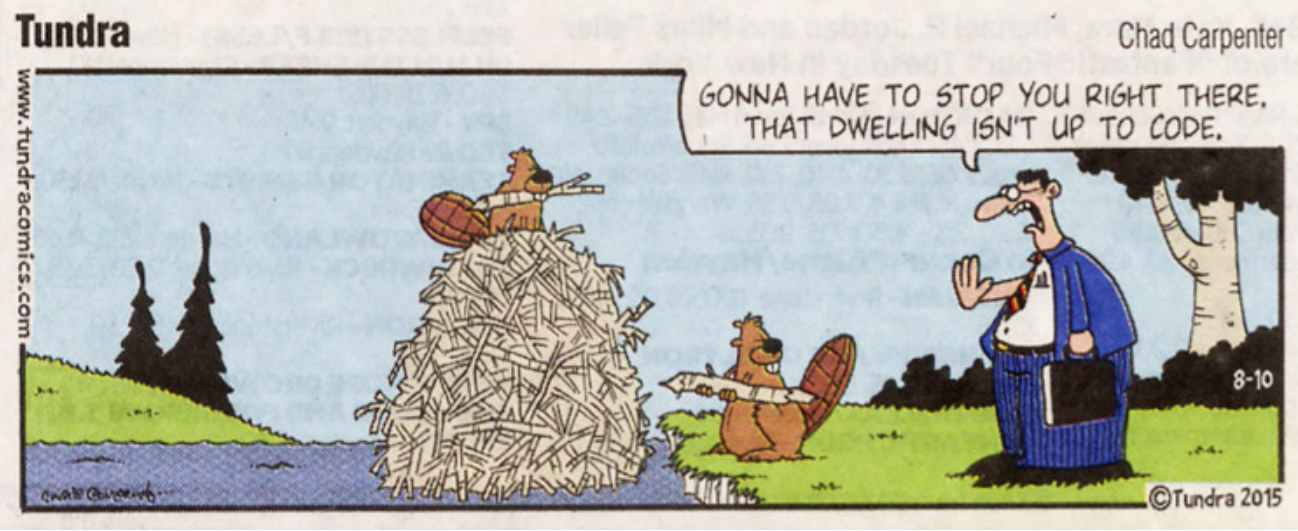


16.The energy use intensity (EUI) of a future building
    A. can be estimated by using SBEED or Sefaira
    B. indicates its compliance with Architecture 2030's guidelines
    C. determines if on-site PVs can meet its energy requirements
    D. all of the above

17. Seasonal balance point temperature calculations
    A. give accurate EUI predictions
    B. help understand the thermal needs of a building
    C. indicate which passive strategies are most effective
    D. all of the above

18. The value of energy modeling during the design process is that
    A. accurate energy use will be predicted
    B. design alternatives can be examined for impact
    C. it assures code-compliance will be attained
    D. all of the above

19. Local vernacular architecture is a viable precedence study because
    A. vernacular architecture usually responds to local climate passively
    B. the forms and materials of the vernacular can be applied directly
    C. both of the above
    D. none of the above



20. In temperate zones buildings may have to respond to elements of
    A. hot arid climates
    B. hot humid climates
    C. cold climates
    D. all of the above

21. South-facing windows are effective for passive heating in the northern hemisphere because
    A. they gain more heat in winter than in summer
    B. they are easily shaded in summer
    C. other cardinal orientations gain more heat in summer than in winter
    D. all of the above

22. The solar heating strategy that operates completely passively is
    A. direct gain via glass and mass
    B. indirect gain using aThrombe wall with thermo-circulation vents
    C. isolated gain using a collector downhill from the building
    D. all of the above

23. For effective passive cooling windows must be shaded because
    A. they have low R-values
    B. their solar gains per square foot are much higher than other building components
    C. they are susceptible to infiltration gains
    D. all of the above

24. An egg-crate external shading device can be designed to be effective on
    A. a western façade
    B. a southern façade
    C. an eastern façade
    D. all of the above

25. Silica aerogel improves the performance of double pane glazing
    A. by increasing daylight penetration
    B. by greatly increasing R-value
    C. by improving the color rendering of views
    D. all of the above

26. Low-E films can be found in
    A. heat mirror glazing
    B. ETFE glazing
    C. super windows
    D. all of the above

27. A composite wall with three materials with U-values of 1, 0.5, and 0.05 has an overall R-value of
    A. 1.55
    B. 0.645
    C. 23
    D. none of the above

28. Super insulation
    A. is only effective in arctic climates
    B. can be attained by straw bale construction
    C. is now the standard code requirement
    D. none of the above

29. Natural ventilation can be effective
    A. in both humid and arid climates
    B. at higher indoor temperatures than spaces with air-conditioning
    C. when coupled with air-to-air heat exchangers
    D. all of the above

30. Stack ventilation can be intensified by using
    A. solar heated stacks
    B. wind cowls
    C. operable leeward clerestory windows
    D. all of the above