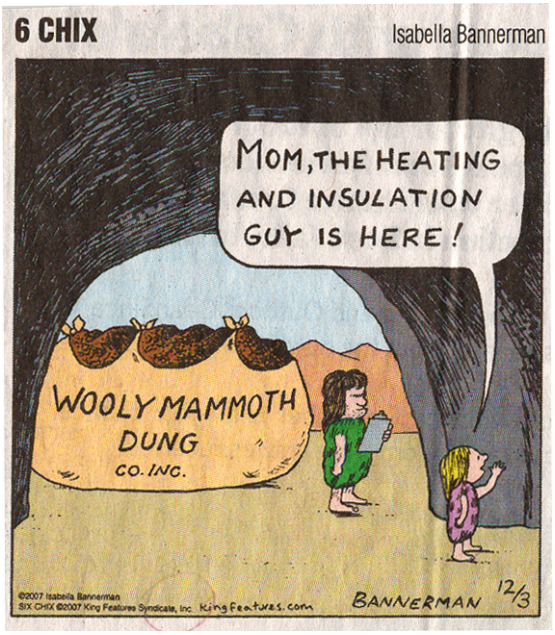
Arch 463
ECS
Fall 2015 Name_____

Midterm II

30 Multiple Choice Questions

1. Adjacent offices that have similar internal loads will be in the same thermal zone
   A. for sure
   B. if they have similar window orientation
   C. if they have well insulated walls
   D. none of the above



2. The Wells Fargo Bank tower in Spokane is an example of
   A. a thermally elegant building
   B. the use of core elements to buffer environmental forces
   C. an effective daylighting strategy
   D. all of the above

3. The Balance Point Graphs for a thermal zone
   A. give indoor temperatures
   B. show the effect of glazing on heat loss
   C. give a graphic indication of heating and cooling needs
   D. none of the above

4. The architect's goals for BedZED was
   A. to foster one-planet living
   B. to achieve carbon neutrality
   C. to produce an exemplary high-density live/work environment
   D. all of the above

5. Although BedZED's passive and local materials strategies are quite successful, BedZED fails in its experiment with
   A. on-site heat and power generation
   B. sewage treatment with a living machine
   C. electric vehicle charging
   D. all of the above

6. BedZED's wind cowls should be classified as
   A. stack ventilators
   B. passive air-to-air heat exchangers
   C. attractive wind vanes
   D. all of the above

7. An advantage of double skin commercial buildings is
   A. protection of exterior movable shading devices within the double skin
   B. atria and garden spaces can be created within the double skin
   C. the cavity can be integrated into heating and cooling strategies
   D. all of the above

8. Courtyards are effective in passive cooling during hot arid summers when they
   A. contain fountains for evaporative cooling
   B. have large trees for shading
   C. allow for unobstructed radiation to the clear night sky
   D. all of the above

9. A small window can out perform a glazed curtain wall
   A. for appropriate daylighting
   B. for appropriate thermal performance
   C. for framing views
   D. all of the above

10. For a single family residence in Miami the most effective passive cooling strategy is
   A. shading
   B. dehumidification
   C. ventilation
   D. none of the above

11. The most thermally effective orientation for the Brillhart house in Miami is on an elongated
   A. E-W axis
   B. SE-NW axis
   C. N-S axis
   D. SW-NE axis

12. HEED allows you to model
   A. passive performance
   B. compare two different schemes
   C. PV and solar hot water performance
   D. all of the above

13. Earthships feature
   A. use of recycled materials
   B. on-site energy generation
   C. on-site water collection and recycling
   D. all of the above

14. Ed Mazria's design for the conservatory at the Rio Grande Botanic Garden
    A. required mechanical heating of the Mediterranean Conservatory
    B. saved enough first costs to allow expansion of the programmed floor area
    C. used vernacular shading strategies
    D. all of the above

15. Village Homes is notable in that
    A. it provides low-energy housing for 2,000 households
    B. storm water is dealt with on site
    C. the entire site is carbon neutral
    D. all of the above

16. The Pittsburgh Convention Center features
    A. daylighted exhibition spaces
    B. naturally ventilated exhibition spaces
    C. fabric ductwork
    D. all of the above

17. Chiswick Park is effective in attaining energy efficiency because it
    A. employed modular construction
    B. used fixed and movable shading devices
    C. incorporates community space
    D. all of the above

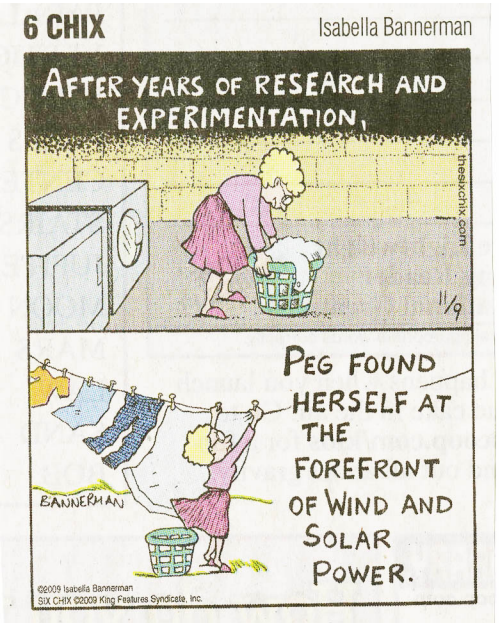
18. Helmut Jahn's State of Illinois Center's most effective cost-saving strategy is
    A. direct solar gain
    B. daylighting
    C. ice making at night for daytime cooling
    D. all of the above

19. Fixed louvres are a great choice for south façade shading because
    A. they block direct gain
    B. they block solar gain, but allow daylight
    C. they adjust to sun position seasonally
    D. none of the above

20. An advantage of an active solar heating system is
    A. control of when the heat is provided
    B. mechanical devices--e.g., pumps and fans
    C. no thermal mass is required
    D. all of the above

21. An art deco home in Moscow features a west-facing curtain wall of single pane clear glass. It should be replaced with better glass because
    A. it will gain too much heat on hot summer afternoons
    B. it will lose too much heat on cold winter nights
    C. both of the above
    D. there is no suitable replacement for this historical glazing

22. Seasonal storage of solar energy cannot be accomplished with
    A. a rock bed
    B. a water tank
    C. phase change materials
    D. all of the above are capable



23. The most efficient active solar collectors are
    A. water-based concentrating collectors
    B. air-based flat plate collectors
    C. PCM-based evacuated tube collectors
    D. all of the above are equally efficient

24. A disadvantage of using an integral photovoltaic roof for a suburban home is
    A. it can't produce as much power as the home needs
    B. it requires expensive batteries to store the electricity
    C. you can only use DC appliances with it
    D. none of the above

25. U.S. PV installations rose slowly and steadily from 2000 to 2009, then
    A. fell off sharply due to the economic recession
    B. rose at a slower rate
    C. rose dramatically due to falling PV prices and greater demand
    D. leveled off

26. Building integrated PVs can serve as
    A. finished roofs
    B. exterior cladding for walls
    C. shading devices
    D. all of the above

27. Examples of building integrated PV systems are limited to
    A. UK and European buildings
    B. commercial and institutional buildings
    C. low-rise buildings
    D. none of the above

28. Which of these buildings does not use PV shading devices

A. Sustainability Base
B. California Academy of Science
C. Pearl River Tower
D. all of the above have PV shading devices

29. In the winter the north wall of Quiz 1's Boston bus shelter should be designed primarily to

A. absorb solar radiation
B. block north winds
C. allow north light
D. all of the above

30. In the Brillhart house the best area to add a stack ventilator is

A. the kitchen
B. the master bedroom
C. the guest bedroom
D. any or all of the above

"They're fine, there's just something about this one that bothers me."