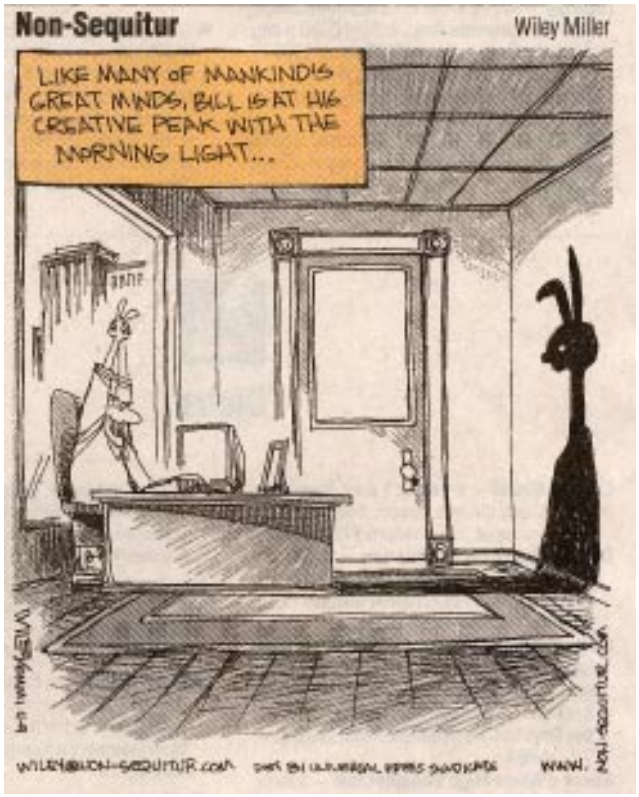
Arch 464
ECS
Midterm I
Spring 2006



30 Multiple Choice Questions

1. The use of daylighting in buildings has the potential to
   A. make them more sustainable
   B. make them more beautiful
   C. improve their occupants performance
   D. all of the above

2. Which of these buildings demonstrates an exemplary bio-regional approach to daylighting?
   A. Legoretta's Managua Cathedral
   B. Botta's San Francisco Museum of Modern Art
   C. Piano's High Museum Addition
   D. all of the above

3. A building that uses daylight to set multiple moods is
   A. Jahn's United Terminal in Chicago
   B. Holl's St. Ignatius Chapel
   C. Aalto's Riola Church
   D. none of the above

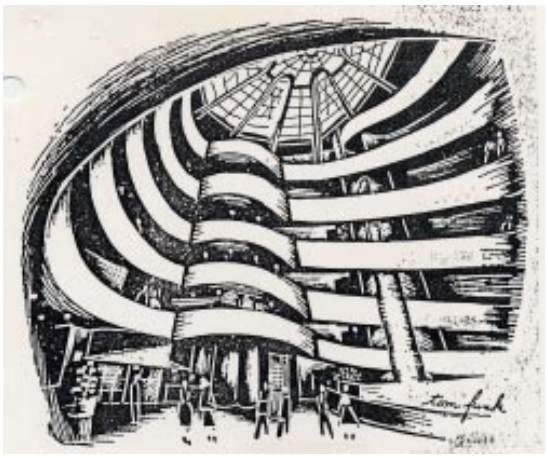
4. In order to achieve a high IRC in a room, you could use surfaces that are
   A. specularly reflective, yet dark, like polished black marble
   B. white and diffusely reflective
   C. clear and specularly transmissive
   D. all of the above

5. According to Weber's Law, if your brother was just able to detect a change of luminance of 2 foot lamberts on a page that was initially 40 FL, he wouldn't notice the change on a 15 FL page until it's luminance decreased by
   A. about 2 FL
   B. about 0.75 FL
   C. about 0.30 FL
   D. Weber's Law doesn't apply to this situation

6. An example of a light source with a high color temperature is
   A. a campfire
   B. an incandescent lamp
   C. daylight from the cool north sky
   D. all of the above

7. How far from a 100 candlepower source in a darkened room must you be to measure 1 footcandle of direct illumination?

A. 100 feet
B. 10 feet
C. 1 foot
D. none of the above



8. The best tool for measuring surface brightness is

A. a light meter
B. an illuminance meter
C. a luminance meter
D. a luminous flux detector

9. To adequately test a daylighting model, you should test it under

A. a cloudy sky
B. a partly cloudy sky without sunshine
C. a clear sky or a heliodon
D. both A and C

10. Daylighting apertures are most effective when they're located

A. high in the wall
B. mid-wall next to a work surface
C. near a reflective floor
D. all of the above

11. The daylighting apertures in the atrium of the National Building Museum and the Grand Courtyard of the British Museum are similar in that they

A. provide adequate ambient light
B. usually exclude the sun component
C. are effective despite low IRCs
D. all of the above

12. To reduce glare from a window that is the sole source of daylight in a room, you could

A. shape the ceiling to reflect light back to the window wall
B. add a skylight
C. splay the interior window surrounds
D. all of the above

13. It's generally accepted that adequate daylight for tasks extends

A. to 15 feet from the window wall
B. to twice the window head distance into the room
C. as far as the lightshelf can push it
D. all of the above

14. Most hand calculation methods
    A. easily show light distribution in a space
    B. are simple to use and help build lighting intuition
    C. are adaptable to organic geometries
    D. none of the above

15. Early on computer daylighting prediction tools
    A. recognized that daylight distribution in a space could be shown graphically
    B. were simply computerized hand calculations
    C. produced camera-like color renderings of the lighted space
    D. none of the above

16. The best daylight prediction is made by
    A. a Lumen-Micro model
    B. a 3-D Studio Max model with radiosity applied
    C. a Desktop Radiance model
    D. a carefully constructed physical model

17. Physical daylighting models are helpful in the design process because
    A. you can photograph the space under varied sky conditions
    B. you can test a variety of aperture configurations before building the real building
    C. you can measure and calculate the daylight factors
    D. all of the above

18. A rectilinear mirror box artificial sky
    A. adequately predicts sunlight penetration
    B. faithfully reproduces light distribution from an overcast sky
    C. gives realistic color rendition of interior surfaces
    D. all of the above

19. The three lamp issues that are closely linked are
    A. efficacy, lumens, and life
    B. efficacy, life, and health
    C. efficacy, lumens, and color
    D. life, color, and health

20. The best color rendering comes from lamps whose spectral distribution of light is
    A. most saturated at wave lengths of pleasing colors
    B. evenly distributed at all wave lengths with some color spikes
    C. smoothly distributed across all wavelengths
    D. all of the above

21. The best quality of an 100-watt incandescent lamp is
    A. low cost
    B. good color rendering
    C. long lamp life
    D. all of the above

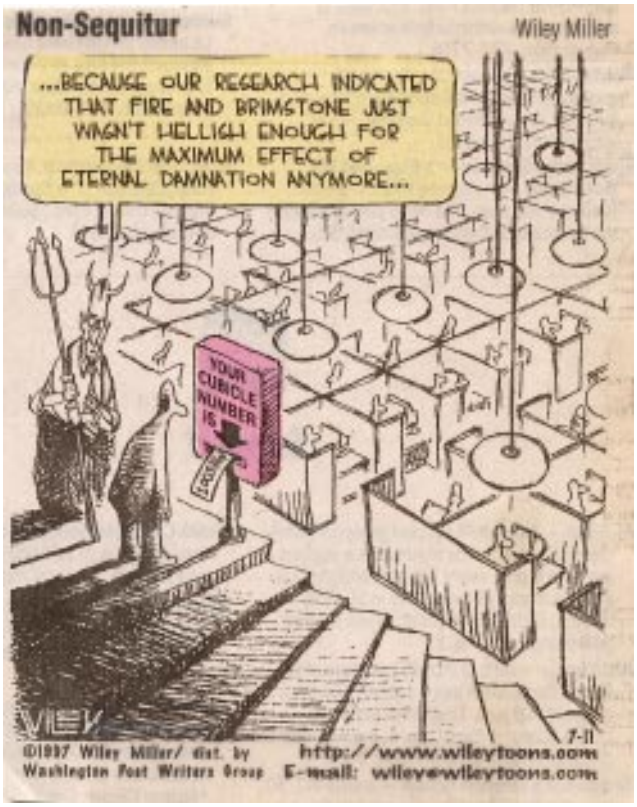
22. You should expect a superior CFL to have
    A. warm white phosphors
    B. an electronic ballast
    C. a high wattage
    D. all of the above

23. Which HID lamp would make it most difficult to identify your blue car from a distance in a parking lot at night?
    A. metal halide
    B. mercury vapor
    C. low-pressure sodium
    D. all of the above

24. The effect of light that affects health most profoundly is
    A. melatonin suppression
    B. non-visual stimulation
    C. heightened body temperature
    D. all of the above

25. The newly developed lamps that shows signs of versatility, energy-efficiency, and long life are
    A. induction lamps
    B. light emitting diodes
    C. cold cathode lamps
    D. all of the above

26. The photometric curve depends on
    A. only the lamp
    B. only the fixture
    C. both lamp and fixture
    D. lamp, fixture, and room configuration



27. A direct/indirect fixture has the advantage over a ceiling-mounted direct fixture with parabolic louvers in that it
    A. can be more effectively integrated with daylighting
    B. avoids most glare problems
    C. provides better task light
    D. all of the above

28. When did illumination level recommendations relate most closely to the point of diminishing returns for task execution?

A. 1930s
B. 1960s
C. 1970s
D. today

29. The best control scheme for integrating electrical and daylight is

A. motion detectors
B. photocell sensors
C. individual infrared controllers
D. all of the above

30. Using the Zonal Cavity method you calculated that a square reading room equipped with 2' by 2' fluorescent fixtures requires 37.7 fixtures. How would you best distribute them in the space?

A. 3 rows of 13 fixtures
B. 4 rows of 10 fixtures
C. 5 row of 8 fixtures
D. 6 rows of 6 fixtures