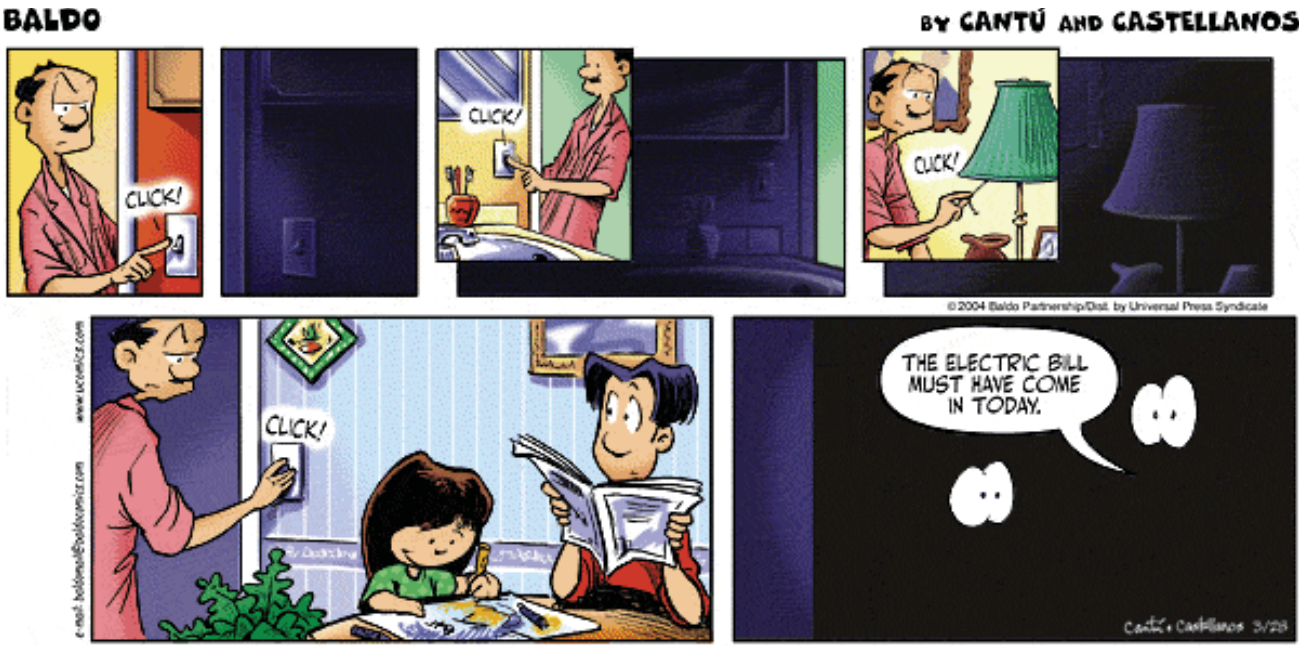
Arch 464
ECS
Midterm I
Spring 2009

30 Multiple Choice Questions



1. Olson Sundberg's Wright Gallery in Seattle is similar to a daylighting model in that
   - A. it does more with less
   - B. the interior is more beautiful than the exterior
   - C. it has camera ports for observing the effects of lighting
   - D. all of the above

2. The vela mounted on circular skylights in Renzo Piano's addition to the High Museum in Atlanta
   - A. are shaped to provide pools of light in the galleries
   - B.act as shading devices for the skylights
   - C. help provide even diffuse light to the galleries
   - D. both B and C above

3. The lighting designer has the most control over
   - A. senders
   - B. interveners
   - C. receivers
   - D. perceivers

4. You know that you are looking at a perfectly diffuse transmitter that is exposed to direct sun when
   - A. you can't determine the sun's location
   - B. the transmitter's surface is 3 times brighter in the center than at the edges
   - C. light in the illuminated space is evenly distributed
   - D. all of the above

5. Weber's Law provides a scientific explanation of
   A. transmission
   B. reception
   C. perception
   D. none of the above

6. On a clear night stars above a Palouse wheat field appear brighter than those in downtown Moscow because
   A. country stars are brighter
   B. smog reduces the intensity of star light
   C. the wheat field context is darker
   D. none of the above

7. When a 4 candela source at the center of a 4-foot radius sphere shines on its inner surface who's reflectande is 0.70
   A. illuminance at the surface is 1 footcandle
   B. the inner surface luminance is 0.70 footcandles
   C. the source produces about 50 lumens
   D. all 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. A daylighting scheme should be tested for
   A. perfectly cloudy sky conditions
   B. partly cloudy sky conditions
   C. clear sky conditions for morning, noon, and afternoon for all seasons
   D. both A and C above

10. Daylighting in classrooms is important because
   A. on the average over 70% of school energy is spent on electric lighting
   B. good daylighting improves learning
   C. it provides even, constant lighting
   D. all of the above

11. Glare from daylighting may be mitigated by
    A. providing apertures in two adjacent room surfaces
    B. using highly reflective, diffuse wall surfaces
    C. splaying the apertures' surrounds on the interior
    D. all of the above

12. To increase the amount of daylight deep in a space with an aperture on the south facade, you could
    A. add a light shelf
    B. raise the height of the window head
    C. use diffusing glazing
    D. all of the above

13. By sketching a daylighted space on neutral-toned paper (like a grocery bag) you can improve your intuition about the effects of apertures and surfaces because
    A. you must draw both light and shadow
    B. apertures are rendered lighter than room surfaces
    C. the true color of daylight is accurately portrayed
    D. all of the above

14. The hand calculation method that relies on room geometry and the distribution of light in a perfectly overcast sky is
    A. the LOF lumen method
    B. the BRS protractor method
    C. the Graphic Daylight Design Method
    D. all of the above

15. In pioneering versions of daylighting prediction software, the most effective presentations of results were
    A. tables of numerical values of illumination levels at evenly spaced grid points
    B. rendered luminance of all room surfaces
    C. spline-mesh graphics of light distribution in the architectural space
    D. simple sections of light levels in architectural space

16. The modern up-to-date daylight prediction software that is capable of dealing with all possible scenarios is
    A. Lumen-Micro
    B. AGi32
    C. SPOT
    D. none of the above

17. The best way to test a daylighting model for sunlight penetration is with a
    A. hemispherical artificial sky
    B. heliodon
    C. mirror box artificial sky
    D. all of the above

18. An effective daylighting model must have accurate reflectances modeled in its
    A. interior
    B. interior and surroundings that are visible from inside
    C. interior and exterior surfaces
    D. interior surfaces above the work plane

19. The 1970s' IES recommendations for office lighting levels were
    A. lower than European recommendations
    B. highly influenced by those providing power, equipment, and design services
    C. consistant with studies on the point of diminsihing returns for light levels vs. performance
    D. all of the above

20. A fluorescent lamp in a well-daylighted office will last longer in actual years if
    A. it is never turned off
    B. it is only turned on all night every night
    C. daylight sensors turn it on for no more than 3 hours each morning and each evening
    D. daylight senors turn it on and off many times each day

21. Lamps with the highest efficacy will usually have
    A. the longest life
    B. the best color rendering
    C. the highest wattage
    D. all of the above

22. The lamp with the highest color rending index is
    A. incandescent
    B. cool white fluorescent
    C. high pressure sodium
    D. metal halide

23. Seasonal Affect Disorder can be treated effectively by
    A. melatonin supplementation during the daytime
    B. full spectrum light exposure
    C. daylighting alone
    D. none of the above

24. Low-voltage MR-16 lamps are
    A. LEDs
    B. compact fluorescents
    C. HIDs
    D. incandescents

25. Lamps that employ phosphers on their inner surfaces are
    A. CFLs
    B. daylight fluorescents
    C. improved metal halides
    D. all of the above

26. Compared to incandescent lamps, LEDs
    A. have a longer predicted life
    B. provide a wider range of color outputs
    C. use far less energy for equivalent illumination
    D. all of the above

27. You can use a lamp and fixture's photometric curve to
    A. calculate illumination from a point source
    B. determine if the fixture is direct or indirect
    C. aim the lamp at the object to be illuminated
    D. all of the above

28. A luminous ceiling can be created by
    A. an indirect lighting scheme
    B. a direct-indirect lighting scheme
    C. closely spaced direct lighting fixtures
    D. all of the above

29. For a room with two point sources and three line sources, you can calculate the illumination on a work surface
    A. using the point source method
    B. using the line source method
    C. both A and B and adding the results of each calculation
    D. using the lumen method

30. Solving the Zonal Cavity method for number of fixtures gives a result of 25 for a specific room. Which of the following could be an effective fixture placement scheme?
    A. a 5 by 5 array of fixtures
    B. a 4 by 6 array of fixtures
    C. a 3 by 9 array of fixtures
    D. any of the above