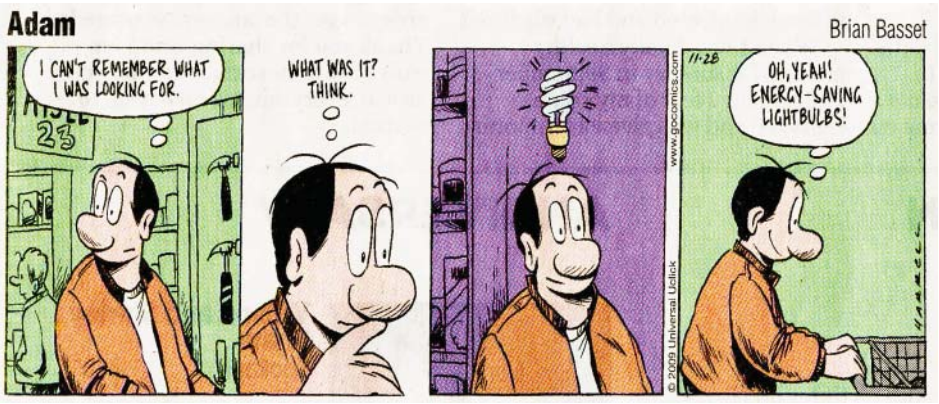
Arch 464
ECS
Midterm I
Spring 2009

30 Multiple Choice Questions



1. The large ocular aperture that dominates Botta's San Francisco Museum of Modern Art
    A. guides daylight to gallery spaces
    B. provides ambient light to the grand staircase
    C. demonstrates a regionally appropriate daylighting strategy
    D. all of the above

2. The lower windows in the nave of St. Martins-in-the-Field church in London
    A. employ a ceiling strategy similar to Aalto's for the study carrel area in the Mt. Angel Abbey Library
    B. provide task lighting for the nearby pews
    C. have deep window surrounds that help mitigate glare
    D. all of the above

3. The transmitter that is least likely to cause glare problems on a clear day at noon in Moscow, ID. is
    A. specular
    B. semi-diffuse
    C. diffuse
    D. all of the above are equally apt to cause glare

4. The best approach to lighting design is to
    A. rely on standards that are purely objective
    B. balance reliance on objective and subjective measures of light
    C. rely solely on the perception of the intended user
    D. none of the above

5. When comparing the output of a source with a color temperature of 5000°K to one with a color temperature of 3500°K
    A. the light from the former seems warmer
    B. the light from the latter seems flatter
    C. the light from the former seems colder
    D. the light from the latter seems dimmer

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. urban pollution reduces the intensity of star light
C. the wheat field context is darker
D. none of the above

7. When you're measuring footcandles, you're measuring

A. luminous intensity
B. luminous flux
C. density of luminous flux
D. all of the above

8. Assume no other light source. If 10,000 foot candles is measured at the exterior surface of a grey glass window with a transmittance of 0.04, the brightness of an interior wall (with a reflectance of 0.80) that is in the direct sun is

A. about 400 footcandles
B. about 32 footcandles
C. about 320 footlamberts
D. none of the above

9. In a daylighted building, an exterior lightshelf is part of the

A. sky component
B. external reflected component
C. internal reflected component
D. sky dome

10. Del Mar School in El Cerrito, CA, demonstrates that classrooms can be effectively illuminated by

A. north-facing clerestories
B. south-facing clerestories
C. both of the above
D. none of the above

11. A strategy for providing cool daylight to a space would be

A. providing apertures in two adjacent room surfaces
B. using clerestory windows high in the space
C. installing a diffuse curtain wall
D. all of the above

12. To decrease the possibility of glare in an unilaterally daylighted space, you could

A. add a light shelf
B. increase the brightness of interior surfaces
C. splay the apertures
D. all of the above

13. Sketching a daylighted space
    A. can improve your understanding of its lighting
    B. can improve your intuition for daylight behavior
    C. can serve as a design tool
    D. all of the above

14. A hand calculation method for daylighting that is most effective as a design tool
    A. gives precise illumination levels at a point-of-interest
    B. works with a wide variety of sky conditions
    C. shows the relative distribution of light in a space
    D. gives electric energy savings as well as average daylight levels

15. ArchiPhysics Daylight is a useful tool for making early design decisions because
    A. it gives rapid feedback on light distribution and the thermal properties of the window wall
    B. it shows false-color renderings of all room surfaces
    C. it allows a wide range of wall, window, and internal reflectivity configurations
    D. all of the above

16. The modern daylight prediction software that is capable of predicting all possible scenarios is
    A. Ecotect
    B. AGi32
    C. 3D Studio Max
    D. none of the above

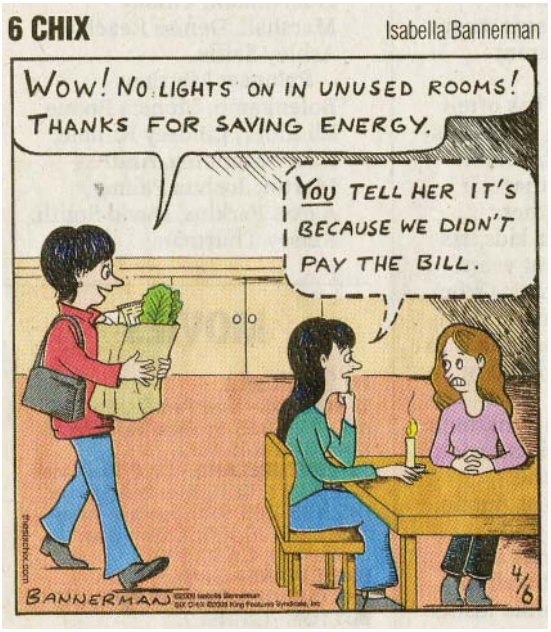
17. To obtain accurate daylight factors for a physical model you should test the model with a
    A. hemispherical artificial sky
    B. perfectly overcast real sky
    C. mirror box artificial sky
    D. any of the above

18. An effective daylighting model allows the designer to
    A. measure interior illumination accurately
    B. photograph the interior to record and compare the spatial qualities of lighting
    C. quickly remodel apertures and shading devices to test alternatives
    D. all of the above

19. Today's recommendations of 30-70 footcandles for office lighting levels
    A. are lower than European recommendations
    B. could be lowered by 30% without significant degradation in people's ability to perform office tasks
    C. are highly inconsistent with energy code requirements for lighting
    D. all of the above

20. Today's lighting controls can
    A. turn off lights in unoccupied spaces
    B. dim or turn off lights in coordination with daylight levels
    C. provide user overrides of automatic responses to occupancy or daylight
    D. all of the above

21. Incandescent lamps
    A. have the longest life
    B. have the worst color rendering
    C. will soon be illegal for most uses in Europe
    D. all of the above



22. The lamp that isn't dependent on a ballast for a high intensity discharge to excite internal gasses is
    A. compact fluorescent
    B. high pressure sodium
    C. metal halide
    D. light emitting diode

23. While an LED lamp operates at a cooler temperature than a CFL, significant waste heat is generated by
    A. electric resistance
    B. its ballast
    C. its driver
    D. all of the above

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

25. An advantage of using white LEDs rather than low-pressure sodium lamps for parking lot illumination is
    A. reduced energy use
    B. easier automobile recognition
    C. lower maintenance costs
    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. Light therapy can be used to
    A. treat Alzheimer patients
    B. treat seasonal affect disorder (SAD)
    C. mitigate jet lag
    D. all of the above

28. For the best integration with a daylighting scheme chose a photosensor controlled

A. an indirect lighting scheme
B. a direct-indirect lighting scheme
C. a direct lighting scheme
D. any of the above

29. The point source method for a room illuminated by four incandescent lamp fixtures gives a result of 16 footcandles on a desk surface.

A. This prediction is optimistic.
B. This prediction is only correct at night.
C. This prediction must be multiplied by four.
D. This prediction is pessimistic.

30. The Zonal Cavity method prediction for a room with a luminous ceiling using direct lighting from fixtures with parabolic reflectors

A. inaccurately models light levels on the work plane
B. gives proper spacing and placement of the fixtures in the room
C. gives no indication of potential gloom problems where wall meets ceiling
D. all of the above