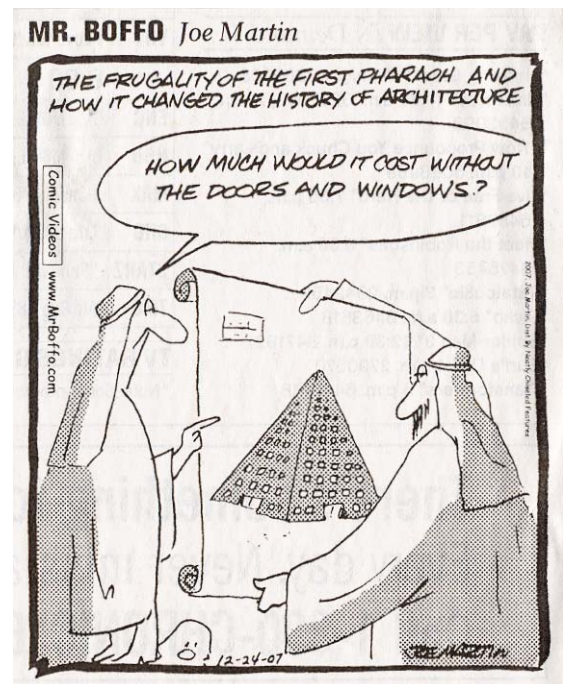


Arch 464
ECS
Midterm I
Spring 2008

30 Multiple Choice Questions

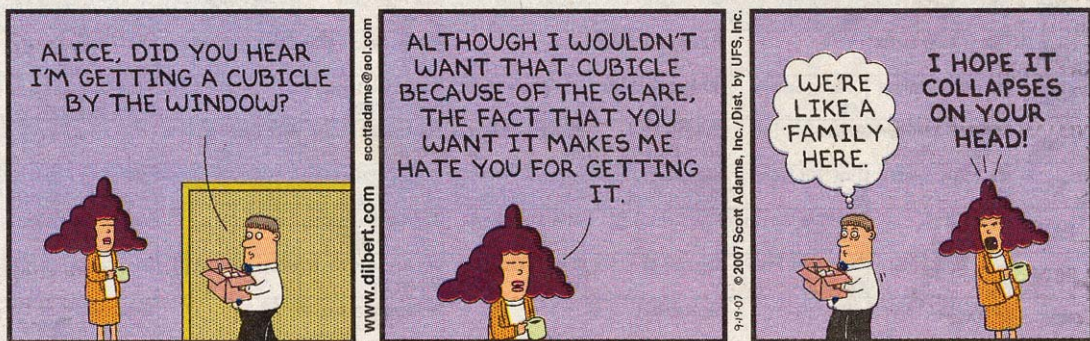
1. Effective use of daylighting in buildings can be linked to
 - A. sustainability
 - B. improved occupant productivity
 - C. reduced energy use
 - D. all of the above
2. The building with the least likelihood of being effectively daylighted was built
 - A. before incandescent lamps were invented
 - B. before use of air-conditioning became widespread
 - C. between 1965 and 1972
 - D. to LEED platinum standards
3. A daylighted building that was actually designed for evolution, flexibility, and adaptability is
 - A. Gehry's Walt Disney Concert Hall in LA
 - B. Gare d'Orsay in Paris
 - C. Aalto's Riola Church in Italy
 - D. none of the above
4. An example of a specularly reflective architectural surface is
 - A. the titanium panels of Gehry's Stata Center at MIT
 - B. the polished black marble wall of Lin's Viet Nam War Memorial
 - C. an ordinary reflective glass office tower
 - D. all of the above
5. Why is Weber's Law pertinent to lighting design?
 - A. It supports the case for objective measurement of light levels.
 - B. It helps in calculating illumination levels on the work plane.
 - C. It supports the case for perception-based assessment of lighting.
 - D. none of the above
6. Assuming equal surface luminance, we would be most visually sensitive to a
 - A. red fire truck
 - B. blue police car
 - C. a yellow house
 - D. a deep purple sky



7. How far from a 1257 lumen source in a darkened room must you be to measure 6.25 footcandles of direct illumination?
- A. 4 feet
 - B. 2 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. A daylighting designer should take into account
- A. light distribution of a perfectly cloudy sky
 - B. reflected light from external objects
 - C. surface treatment of walls and ceilings
 - D. all of the above
10. Mira Vista and Del Mar schools (circa ~1955) in California are beautifully daylighted because
- A. all windows face due south
 - B. all windows use translucent glazing
 - C. all clerestory windows are effectively shaded
 - D. all of the above
11. You can experience the cool nature of daylight by observing
- A. simultaneously light from a north-facing and a south-facing skylight at noon on a sunny day
 - B. the seasonal difference between summer light and winter light in a sidelighted building
 - C. cloudy sky daylight versus incandescent or warm white fluorescent light in a space
 - D. all of the above
12. In a space with a single skylight, following the 25% rule-of-thumb would result in the most even daylight in a large room
- A. with a sloped ceiling
 - B. with a very high aperture in a hipped roof with a cathedral ceiling
 - C. with a low ceiling
 - D. with ventilation at the skylight

Dilbert

Scott Adams



13. Using a lightshelf that extends outside of a south-facing window
- A. reduces the amount of light in the interior space
 - B. results in more even distribution of light in the interior space
 - C. can act as an effective shading device
 - D. all of the above
14. The hand calculation method that results in the most satisfactorily and easily obtained visualization of light distribution in an architectural space is
- A. the LOF lumen method
 - B. the BRS protractor method
 - C. the Graphic Daylight Design Method
 - D. none of the above, a computer program is required
15. If you wanted to do quick modeling of different options for daylighting and its thermal consequences in a rectilinear space that has apertures in only one surface, you could use
- A. ArchiPhysics Daylight program
 - B. Daylight 1-2-3
 - C. Skycalc
 - D. all of the above
16. Computer-based daylight prediction program that is the least restricted by room geometry is
- A. Lumen-Micro
 - B. 3-D Studio Max with radiosity applied
 - C. SPOT
 - D. none of the above are restricted by geometry
17. In order to use a physical daylighting model effectively, you must
- A. test it under partly cloudy skies
 - B. photograph your model
 - C. assure that all construction joints are light tight
 - D. all of the above
18. The artificial sky that can predict both daylight distribution from a cloudy sky and sunlight penetration for all times of year is
- A. IDL Boise's mirror box sky
 - B. Cardiff University's hemispherical sky
 - C. University of Michigan's hemispherical sky
 - D. all of the above
19. A 100-watt lamp's efficacy is an indication of
- A. how many lumens it will produce
 - B. how many hours it will last
 - C. what its color temperature will be
 - D. all of the above

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. Daily exposure to full-spectrum lighting can result in

- A. melatonin suppression
- B. avoidance of SAD
- C. effective treatment of Alzheimer's disease
- D. all of the above

22. The most energy-efficient lamps that you can buy today are

- A. incandescent
- B. compact fluorescent
- C. high pressure sodium
- D. light-emitting diodes

23. What is a reasonable argument against replacing an incandescent lamp with a CFL?

- A. poor color rendering
- B. excessive first cost
- C. flickering ballasts
- D. none of the above

24. Color rendering for HID lamps can be improved by

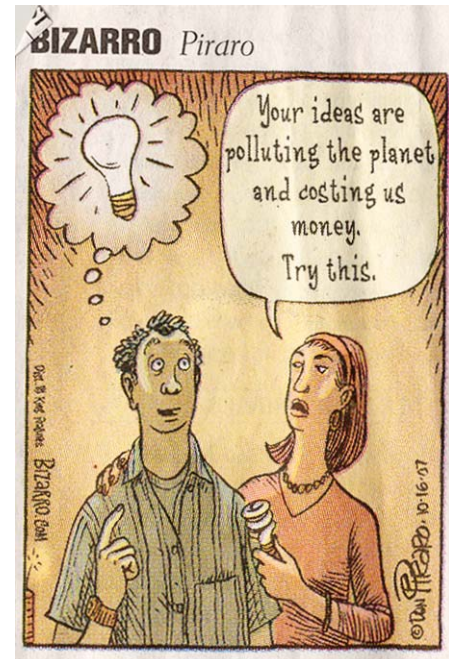
- A. using only metal halide lamps
- B. applying phosphors to the inner surface of the bulb
- C. using them only in high-bay applications
- D. none of the above

25. A lamp's photometric curve is important because

- A. it is necessary in all hand methods for calculating illumination levels in a space
- B. it helps a designer visualize light distribution from the fixture
- C. it gives the luminance of the lamp at different angles
- D. all of the above

26. Fixtures for fluorescent tubes can be used to create

- A. direct illumination
- B. direct/indirect illumination
- C. indirect illumination
- D. all of the above



27. A direct/indirect fixture has the advantage over a ceiling-mounted direct fixture with parabolic louvers in that it

- A. can be controlled by a photocell sensitive to daylight levels
- B. avoids most gloom problems
- C. provides better task light
- D. all of the above

28. The 1936 edition of MEEB gave reasonable footcandle recommendations for office lighting. Soon after World War II, American recommendations became excessive because

- A. energy was thought to be inexpensive and infinitely available
- B. air-conditioning and fluorescent lighting allowed large office floor plates
- C. those who manufactured lighting equipment, sold power, and designed lighting were responsible for making the recommendations
- D. all of the above

29. You can increase the actual life of your fluorescent lamps by

- A. using a control scheme that turns them off when daylight is adequate
- B. never turning them off
- C. never turning them off and using a air-handling troffer
- D. none of the above

30. You've used the line source method to predict the illumination delivered to your exam paper in TLC O44. You'd be surprised if

- A. less light arrived
- B. the prediction was right on
- C. significantly more light arrived
- D. either A or B above occurred