

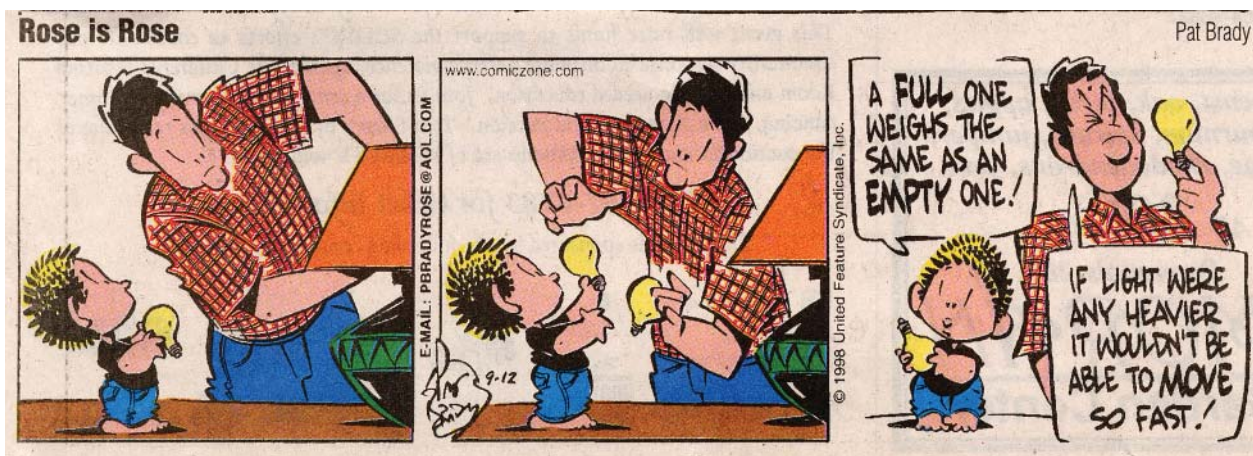
Arch 464  
ECS  
Midterm I  
Spring 2007

### 30 Multiple Choice Questions



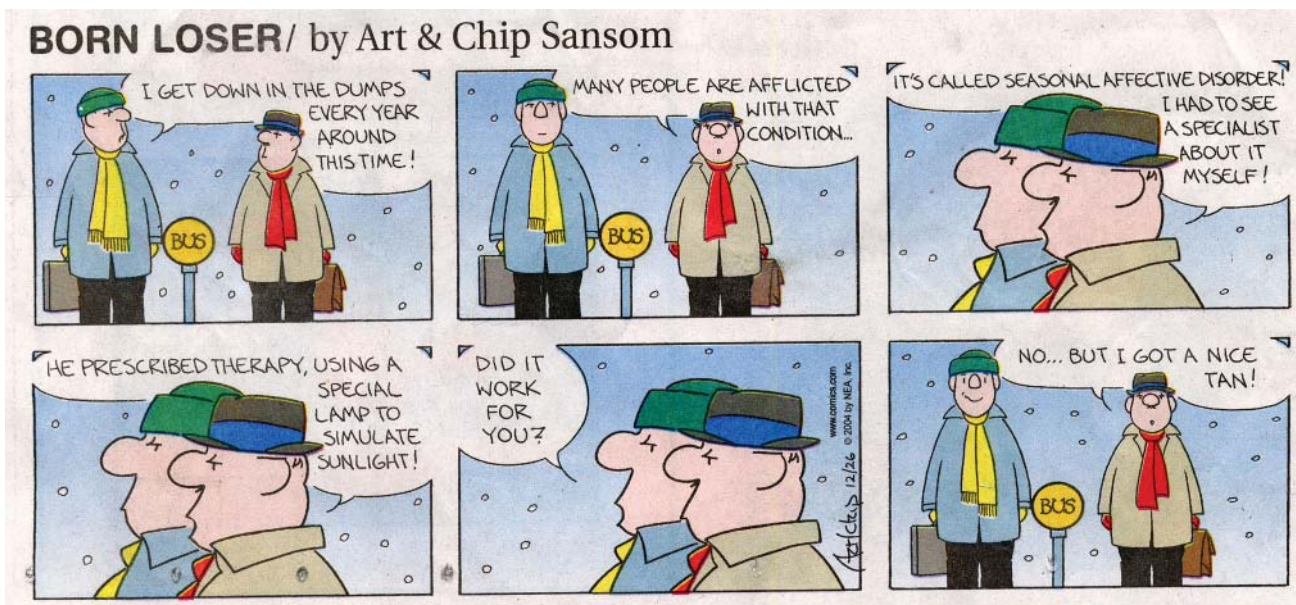
1. The vela of Renzo Piano's addition to the High Museum in Atlanta are a great example of Guzowski's plea to
  - A. Do More with Less
  - B. Design for Evolution, Flexibility, and Adaptability
  - C. Shape Form to Guide Flow
  - D. all of the above
2. The 19th century designer of the Gare d'Orsay in Paris probably didn't intend the building to
  - A. be well daylighted
  - B. become a world-class art museum
  - C. consist of a variety of daylighting experiences
  - D. all of the above
3. Helmut Jahn's United Airlines Terminal at Chicago O'Hare uses fritted glass to
  - A. provide diffuse daylighting from curtain walls
  - B. minimize solar gain through east- or west-facing glazing
  - C. provide effective indirect electric lighting at night
  - D. all 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, in a room that is twice as well illuminated as the base case, in order for occupants to sense an increase in illumination you'd have to add
- A. about 2 FC more than in the base case
  - B. about twice as much illumination as you would to the base case
  - C. about twenty times as much illumination as you would to the base case
  - D. Weber's Law doesn't apply to this situation
6. The paradox of color temperature is that sources appearing to have a warm color
- A. have a relatively high color temperature
  - B. have a color temperature near  $0^\circ$  K
  - C. have a relatively low color temperature
  - D. have no consistency in their color temperature assignment
7. When observed from 10 feet away a 100 candlepower source would have a luminous intensity of
- A. 1 candela
  - B. 10 candelas
  - C. 100 candelas
  - D. 1 foot candle
8. The surface brightness of a flat black wall with 100 foot candles of incident illumination would be about
- A. 4 foot lamberts
  - B. 20 foot lamberts
  - C. 40 foot lamberts
  - D. 100 foot lamberts
9. Which indoor space most closely represents a perfectly cloudy sky condition
- A. an all-glass pavilion—walls and roof
  - B. a dome with an oculus
  - C. a barrel vault with a gable skylight on an east-west axis
  - D. both A and C



10. The most effective daylighting design for a window wall would be
- A. all translucent glazing
  - B. translucent glazing below clear glazing
  - C. translucent glazing above clear glazing
  - D. all transparent glazing
11. Alder and Sullivan's Wainwright Building in St. Louis is adequately daylighted because
- A. it has a lightwell
  - B. all offices have windows
  - C. it has lightshelves
  - D. all of the above
12. Contrast usually becomes disability glare when the dark to bright ratio of adjacent surfaces exceeds
- A. 1:3
  - B. 1:10
  - C. 1:100
  - D. none of the above
13. To provide adequate ambient light from toplighting apertures, the glazing area should be no more than
- A.  $\frac{3}{4}$  of the floor area
  - B.  $\frac{1}{2}$  of the floor area
  - C.  $\frac{1}{4}$  of the floor area
  - D.  $\frac{1}{10}$  of the floor area
14. The hand calculation method that gives the most compelling vision of daylight distribution in space is
- A. LOF's lumen method
  - B. the Graphic Daylight Design Method
  - C. the BRS daylight protractors
  - D. Lumen Micro
15. For a rectilinear room, the best (easiest and quickest) computer model for parametric testing of different aperture configurations for different seasons and sky configurations is
- A. Lumen Micro
  - B. Lumen Designer
  - C. 3-D Studio Max with radiosity applied
  - D. Ecotect
16. The best daylight prediction method for all circumstances is
- A. a Lumen-Designer model
  - B. a 3-D Studio Max model with radiosity applied
  - C. a Desktop Radiance model
  - D. none of the above

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. The artificial sky capable of simulating multiple sky conditions is
- A. a mirror box like the one at IDL Boise
  - B. a reflective hemispherical sky like the one at UC Berkeley
  - C. a hemispherical sky with distributed discrete light sources like the one at UCardiff
  - D. none of the above
19. Basically the more efficient an electric lamp is the
- A. longer its rated life
  - B. better its color rendering
  - C. worse its efficacy
  - D. all of the above
20. The color rendering problem common to HID lamps is specularly
- A. uneven distribution characterized by spikes at signature wavelengths
  - B. even distribution at all wave lengths with some color spikes
  - C. smooth distribution across all wavelengths
  - D. none of the above
21. Because the initial cost of a 100-watt incandescent lamp is very low,
- A. it represents the best value in lighting
  - B. it is deceptively expensive to operate
  - C. both of the above
  - D. none of the above



22. If a CFL is heavier than an incandescent lamp, it
- A. is probably of higher wattage
  - B. has an electronic ballast
  - C. will cause a visible flicker, especially as it ages
  - D. all of the above
23. Research has found low light levels effective in inducing
- A. rational, analytic thought
  - B. creative, subjective imagination
  - C. sleep
  - D. none of the above
24. Full spectrum light therapy can help mitigate the effects of
- A. seasonal affect disorder (SAD)
  - B. Alzheimer's disease
  - C. jet lag
  - D. all of the above
25. If you are designing a lighting scheme that requires energy efficiency and varied light colors, the perfect lamp is
- A. incandescents on dimmers
  - B. light emitting diodes
  - C. neon
  - 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 general diffuse light fixture would have the least potential for glare in
- A. daylighted space
  - B. a space with dark walls
  - C. a space with many fixtures
  - D. a space with a high IRC
28. Today's recommendations for illumination in an office call for 30-70 foot candles, which is
- A. barely adequate for reading
  - B. about twice as much illumination as considered adequate in 1936
  - C. absurdly over-designed because of manufacturers' influence
  - D. just right

29. The point source method can be used to accurately predict
- A. illumination from only one electric fixture in a room
  - B. illumination from a finite number of electric fixtures in a room by simply adding the contribution of each fixture
  - C. illumination from a luminous ceiling
  - D. illumination from 3 strips of 24-foot long fluorescent fixtures in a room with an 8-foot ceiling height
30. The Zonal Cavity method assumes
- A. even distribution of light in space
  - B. there is little relationship between distance from the source and illumination delivered
  - C. a luminous ceiling
  - D. all of the above

**BALDO**

**BY CANTÚ AND CASTELLANOS**

