

Arch 464
ECS
Midterm I
Spring 2011

30 Multiple Choice Questions



1. An architectonic approach to the use of daylight in buildings is to
 - A. reveal process to educate
 - B. take a bio-regional approach
 - C. shape form to guide flow
 - D. do more with less
2. The daylighting strategy in the Musée d'Orsay in Paris was originally formulated for
 - A. a parking garage
 - B. an art museum
 - C. a railroad station
 - D. none of the above
3. Architectural lighting design is concerned with the manipulation of interveners except when designing
 - A. windows
 - B. interior wall surfaces
 - C. light shelves
 - D. none of the above
4. Your perception of light is
 - A. related to the inverse square of the distance to the source
 - B. a linear relationship between amount sent and received
 - C. an exponential relationship for noticeable change in stimulus governed by Weber's Law
 - 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. The device used to measure foot candles at the work plane in an actual building is
- A. a light meter
 - B. an illuminance meter
 - C. a luminance meter
 - D. any of the above
7. The daylight source that is most instrumental in providing even distribution of light in a room is
- A. sun component
 - B. sky component
 - C. externally reflected component
 - D. internally reflected component
8. In a clear sky climate, the best daylighting strategy would employ
- A. shaded north- and south-facing clerestory windows
 - B. side lights near the work plane
 - C. horizontal skylights
 - D. unshaded windows equally distributed by orientation
9. Effective daylighting can save money for schools because, typically, the percentage of electrical energy use is
- A. 55% for lighting
 - B. 78% for lighting and cooling
 - C. 84% for lighting, cooling, and ventilation
 - D. none of the above
10. The best resource for cool daylight is
- A. a cloudy sky
 - B. the north sky
 - C. the south sky
 - D. none of the above
11. A strategy for providing glare-free daylight to a space would be
- A. providing apertures in two adjacent room surfaces
 - B. using unshaded clerestory windows high in the space
 - C. installing a diffuse curtain wall
 - D. all of the above
12. By rule-of-thumb north-facing sawtooth windows with 100 sqft. of glazing over an 1,100 sqft. room will provide
- A. an average daylight factor of 3
 - B. about 30 footcandles on a cloudy day
 - C. inadequate daylighting
 - D. more daylight on a cloudy day than on a sunny day
13. Glare can be mitigated by
- A. splaying window surrounds and lightwells
 - B. providing apertures on at least two orientations
 - C. creating a high internally reflected component
 - D. all of the above

14. Hand calculation methods for predicting daylighting have all the capabilities of computer methods except

- A. giving precise illumination levels at a point-of-interest
- B. working with a wide variety of sky conditions
- C. showing the relative distribution of light in a space
- D. rendering of surface luminance

15. Early design decisions can be aided by daylight modeling software that

- A. gives precise results based on full design details
- B. shows false-color renderings of all room surfaces
- C. can quickly model a variety of scenarios with a few input parameters
- D. shows light distribution throughout the modeled space

16. The modern daylight prediction software that is capable of predicting all possible scenarios is

- A. Ecotect
- B. AGI32
- C. SPOT
- D. none of the above

17. An artificial skies are better than the real sky for testing physical daylighting models because

- A. they provide consistent light distribution
- B. they can show sunlight penetration
- C. they give accurate illumination levels
- D. all of the above

18. A flawed daylighting model

- A. has camera ports
- B. is made exclusively of white foam core board
- C. is non-representative of exterior wall finishes
- D. all of the above

19. An average fluorescent lamp will need to be replaced soonest if used

- A. 24 hours a day in a casino
- B. 10 hours a day in an interior office space
- C. 3 hours a day, twice a day in a daylighted office space
- D. all of the above will require replacement at the same time



20. From 1936 recommendations for office lighting levels increased by decade for 40 years because of

- A. the influence of lighting manufacturers, utilities, and engineers
- B. advances in scientific understanding of people's ability to perform office tasks
- C. breakthroughs in quality and efficiency of electric light sources
- D. all of the above

21. Incandescent lamps

- A. have the best color rendering
- B. will soon be illegal for most uses in the U.S.
- C. will soon be illegal for most uses in Europe
- D. all of the above

22. Efficient, long lasting, HID lamps include
- compact fluorescent lamps
 - high pressure sodium lamps
 - metal halide lamps
 - all of the above
23. Currently LED lamps operated on AC current are considered
- the world's most efficient lamps
 - about equally efficient as CFLs
 - less efficient than incandescents
 - experimental lamps of little practical use
24. When you select a lamp for superior efficacy, it is likely to also have
- superior life
 - superior lumen output
 - superior color rendering
 - A and B above
25. Total electric lighting system efficiency can be improved by
- integration with daylighting
 - use of occupancy sensors
 - strategic design and placement of fixtures
 - all of the above
26. Good color rendering is usually achieved by lamps that
- have high-intensity output
 - attain full coverage of the visible light spectrum
 - are also considered efficient
 - all of the above
27. Light therapy can be delivered by
- full-spectrum lamps
 - natural daylight
 - blue light
 - all of the above



28. The best way to avoid glare from electric lighting is to employ

- 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. Given a room with a single twelve-foot long fluorescent fixture, you'd be able to predict illumination using

- A. the point source method
- B. the lumen method
- C. the line source method
- D. the zonal cavity method