

40 Multiple Choice Questions – Select the best answer for each one.

### New Questions

1. According to the most recent spaghetti chart, the first law efficiency for energy use in the U.S. is
- A. less than 25%
  - B. about 38%
  - C. Almost 50%
  - D. 100%



2. Why is it appropriate to use a high-grade energy source to power a heat pump for the low-grade task of space heating and cooling?
- A. It isn't.
  - B. Space heating does require high-grade energy.
  - C. It uses high-grade btus to "accumulate" a larger number of low-grade btus.
  - D. None of the above.
3. For an experienced design team, the extra first cost for a LEED Silver building is on the average
- A. the same as a similar code-compliant building
  - B. about 2% more than a similar code-compliant building
  - C. about 5% more than a similar code-compliant building
  - D. over 10% more than a similar code-compliant building

4. The best way to measure the performance of a building is
  - A. by analyzing the utility bills
  - B. by monitoring the building management system
  - C. by surveying the employees
  - D. all of the above
  
5. You are standing between two electric forklift paths. Each forklift has been measured to produce a slight noise of 1 dB at the spot you're occupying. When both forklifts pass you simultaneously, you'll hear
  - A. nothing
  - B. 2 dB of noise
  - C. 3 dB of noise
  - D. 4 dB of noise
  
6. Why does Paley Park in Manhattan seem quiet at 70 dB?
  - A. It doesn't.
  - B. The street is noisier.
  - C. The waterfall effectively masks the street noise.
  - D. It's shady and has movable furniture.
  
7. The least effective way to block road noise at the edge of a site is with
  - A. a wall
  - B. a deciduous tree
  - C. a vegetated berm
  - D. all of the above are effective
  
8. An example of a design where the acoustic strategy of masking is used is
  - A. Predock's Albuquerque Heart Clinic
  - B. Koolhaas' IIT Campus Center
  - C. Paley Park New York
  - D. all of the above
  
9. To use the concrete ceiling in an office as thermal mass while providing an acoustically dead space, you could
  - A. create a concave ceiling to focus sound
  - B. create a convex ceiling to disperse sound
  - C. use vertically hung ceiling baffles to absorb sound
  - D. cover the ceiling with Sonex to resist fire and absorb sound
  
10. The best seats for a bandshell concert are those from which you can
  - A. see the performers
  - B. see the inside of the bandshell
  - C. see the performers and the inside of the bandshell
  - D. see the sunset

11. A problem with using concave ceilings in a room is
  - A. focusing
  - B. creep
  - C. flutter echoes
  - D. all of the above
  
12. The most effective acoustic barrier between adjacent rooms is
  - A. a 2x4 stud wall (STC 34)
  - B. a 2x4 stud wall with double layers of gypsum board (STC 39)
  - C. a concrete masonry block wall (STC 48)
  - D. a double offset stud wall with batt insulation (STC 51) and back to back electrical outlets that make up over 1% of the wall area
  
13. To effectively reduce the noise level in a cafeteria you could
  - A. replace reflective surfaces with absorptive surfaces
  - B. install noise isolation hangers in the existing suspended ceiling
  - C. increase the size of the room
  - D. all of the above
  
14. You can reduce the reverberation time of a lecture hall by
  - A. adding absorptive materials
  - B. making the room smaller
  - C. both of the above
  - D. none of the above



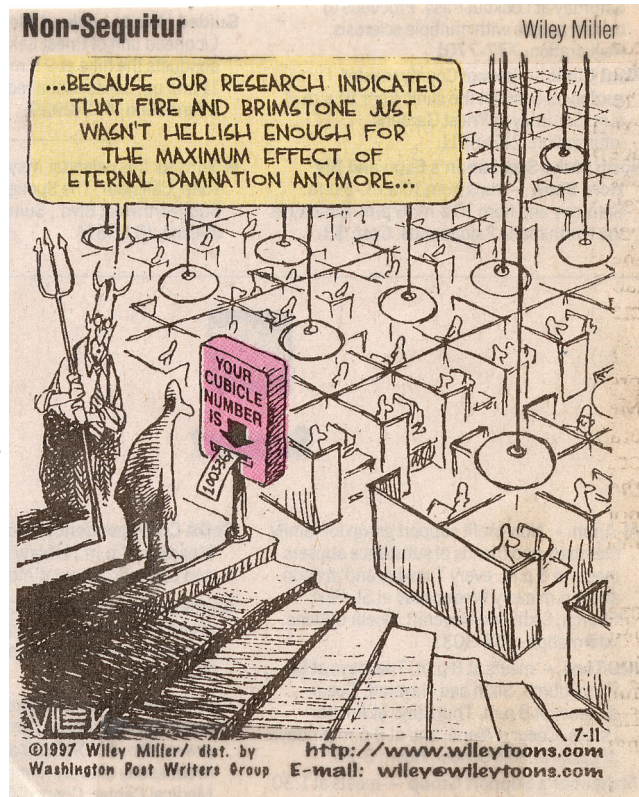
15. A room's impulse response diagram that shows densely packed responses that decrease in intensity smoothly over 1300 milliseconds indicates
  - A. an echo-filled chamber
  - B. a room that's appropriate for small group musical performance
  - C. a dead room
  - D. a room in which speech is garbled

16. In a lecture hall reflective parallel side walls will
- A. widen and enrich the sound of the lecturer
  - B. cause flutter echoes and a cacophony when students chat before class
  - C. ensure that everyone gets direct and reflected sound
  - D. all of the above
17. You can effectively model sound distribution with ray tracing techniques in
- A. careful hand drawings
  - B. 3-D physical models with a laser pointer
  - C. computer-based acoustic models
  - D. all of the above
18. The minimal model you can use to obtain an impulse response diagram that shows the basic reverberation characteristics of a room is
- A. a full-scale mock-up
  - B. an accurate 10:1 scale model
  - C. a crude 40:1 cardboard model
  - D. a tiny 1/8" scale model
19. The type of symphony hall that achieves the best intimacy is
- A. classic shoe box
  - B. a wide hall
  - C. a surround hall
  - D. an opera hall
20. Auditoria that host both vocal and musical events have adapted the reverberation time by
- A. using electronic enhancement systems
  - B. physically changing the room volume
  - C. physically changing the room absorption
  - D. all of the above

### Review Questions

21. Effective daylighting strategies can improve a building's
- A. energy-efficiency
  - B. sustainability
  - C. productivity
  - D. all of the above
22. Light sources with color temperatures of about 3500°F tend to provide
- A. cool north light
  - B. infrared light
  - C. warm yellowish light
  - D. none of the above

23. Your cave has soot-stained walls and a single 25 candela fire. How far from fire must you be to experience illumination levels below one foot-candle?
- beyond 1 foot
  - beyond 5 feet
  - beyond 25 feet
  - beyond 125 feet
24. An effective way to reduce glare in a room is to
- increase the amount of light that penetrates deeply into a room
  - provide apertures in more than one wall
  - paint all the walls a dark color
  - all of the above
25. The best feature of current computer-based daylight prediction tools is
- accurate calculation of average illumination
  - photorealistic rendering of the lighting conditions
  - lighting renderings and calculations that demonstrate light distribution in space
  - glare analysis
26. Hemispheric artificial skies have an advantage over mirror box skies in that
- they are extremely accurate
  - they can model a variety of sky conditions
  - they accommodate large models
  - all of the above
27. Which HID lamp provides the best color rendering?
- metal halide
  - low-pressure sodium
  - tri-phosphor compact fluorescents
  - mercury
28. The lack of access to daylight causes
- melatonin suppression
  - advanced non-visual stimulation
  - SADD during overcast winter seasons
  - all of the above
29. A direct/indirect fixture has the advantage over a ceiling-mounted direct fixture with parabolic louvers in that it
- avoids most glare problems
  - provides better task light
  - can be more effectively integrated with daylight
  - all of the above



30. If you wanted to integrate a daylighting scheme with an electric lighting scheme, you'd specify
- A. motion detectors
  - B. photocell sensors
  - C. infrared sensors
  - D. all of the above
31. A bio-swale that is designed to treat parking lot run-off depends on
- A. percolation through the soil for water purification
  - B. evaporation for water purification
  - C. proper plantings for water purification
  - D. all of the above
32. A modern example of a project designed to control water quality at several scales is
- A. the Portland Water Pollution Control Lab
  - B. the Eden Project
  - C. Chicago City Hall
  - D. all of the above
33. Green roofs are an appropriate design strategy in Portland and Seattle because
- A. they help control stormwater run-off
  - B. they insulate roofs from heat loss
  - C. they intensify the building's microclimate
  - D. all of the above
34. The first step in the Sweet Avenue restoration project on Paradise Creek was
- A. bioremediation of the brownfield site
  - B. widening and terracing the creek bed
  - C. planting ferns that treat polluted run-off
  - D. installing a parking lot
35. To save water in a new slab-on-grade home, you should specify
- A. a low-flush toilet
  - B. an ultra low-flush toilet
  - C. a Clivus Multrum composting toilet
  - D. any of the above
36. Energy-efficient building design can affect what share of this country's energy budget?
- A. 10 to 20%
  - B. 25 to 35%
  - C. 40 to 50%
  - D. 65 to 75%

37. The restaurant between the biomes at the Eden Project is unusual in the UK in that it features
- A. daylighting
  - B. vertical axis wind generators
  - C. a green roof
  - D. all of the above
38. Utility companies fund energy consulting labs in
- A. the Pacific Northwest
  - B. the San Francisco Bay area
  - C. greater Los Angeles
  - D. none of the above
39. The U.S. energy spaghetti charts reveal that from 1960 to 1999
- A. energy use per capital declined slightly
  - B. total energy use more than doubled
  - C. the percentage of energy wasted decreased
  - D. all of the above
40. Fuel cells can potentially be used to
- A. power automobiles
  - B. provide home heating and cooling
  - C. generate electricity from hydrogen fuel without pollution
  - D. all of the above

Catch some rays, catch some Zzzzzzzzzzzs!  
Come back with new energy next fall!

## ZIPPY

