

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

### New Questions



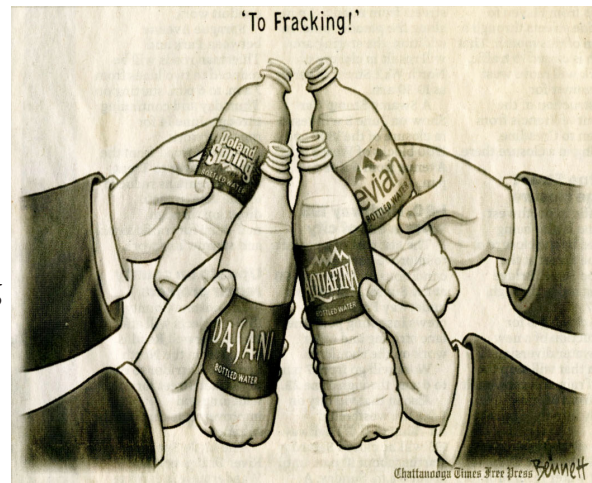
1. U.S. energy use as depicted by the historic “spaghetti charts” from 1960 to 2012
  - A. has shown a steady rise in efficiency
  - B. has increased every year
  - C. has been at more than 50% wasted
  - D. all of the above
2. The combustion fuel that has little effect on climate change is
  - A. bio-mass
  - B. coal
  - C. petroleum and natural gas
  - D. nuclear
3. Which of the following is not considered bio-fuel?
  - A. grain and corn
  - B. elephant grass
  - C. algae
  - D. all of the above are bio-fuel
4. Coal burning causes
  - A. greenhouse gas emissions
  - B. downwind acid rain
  - C. environmental degradation in mining and transport
  - D. all of the above

5. The surface area of water affected by oil spills such as Exxon Valdez and Deepwater Horizon is

- A. small town sized
- B. county sized
- C. small state sized
- D. multiple state sized

6. Side effects of oil and gas extraction by fracking include

- A. water table pollution
- B. earthquakes
- C. high water consumption
- D. all of the above



7. Alternative, non-combustion energy sources without adverse environmental consequences include

- A. hydroelectric dams
- B. utility scale wind farms
- C. utility scale photovoltaic arrays
- D. none of the above

8. Sound travels fastest in

- A. air
- B. water
- C. wood
- D. aluminum

9. According to CBE POE surveys, the most frequently cited problem in green buildings is

- A. acoustics
- B. thermal comfort
- C. air quality
- D. lighting

10. A sound of -1 dB is below the threshold of human hearing. If two -1 dB sources sounded simultaneously,

- A. you wouldn't hear them
- B. they would be at the threshold of human hearing, so maybe, maybe not audible
- C. you'd expect to hear them
- D. they'd be very ear-pleasing

11. Paley Park in NYC is considered a quiet urban retreat because it has

- A. trees and plants
- B. movable chairs and tables
- C. a rather loud water wall
- D. none of the above

12. Notable structures that use aggressive blocking strategies to mitigate site noise problems include

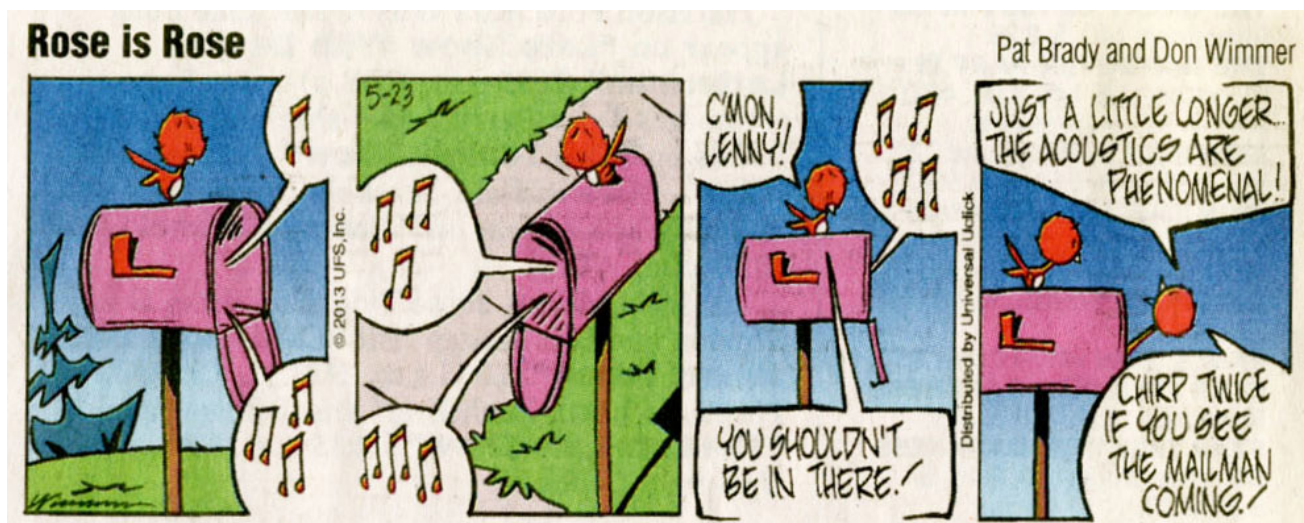
- A. the Albuquerque Heart Clinic
- B. IIT Campus Center
- C. Seattle's Freeway Park
- D. all of the above

13. A loud reverberant room can be improved acoustically by

- A. adding absorption
- B. adding diffusing surfaces
- C. providing masking white noise
- D. all of the above

14. The prime acoustic issue in designing indoor spaces for a proper acoustic environment

- A. is sound transmission in a free field
- B. is sound absorption/reflection
- C. is sound transmission in building materials
- D. all of the above



15. A reverberant space with a quiet acoustic goal would

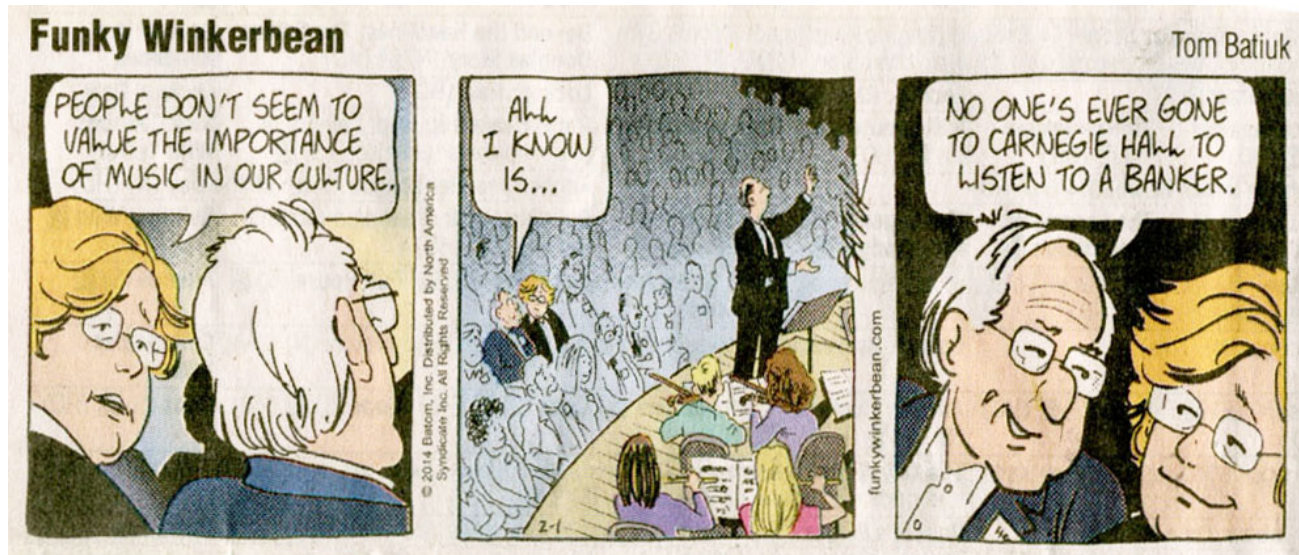
- A. meet its goal
- B. seem acoustically chaotic
- C. be perfect for symphonic performance
- D. none of the above

16. For equitable distribution of sound a small curved reflector in the ceiling plane near the performers should be

- A. concave
- B. convex
- C. either of the above
- D. none of the above



17. The STC rating of an acoustic barrier wall is reduced by
- A. a small hole
  - B. operable windows
  - C. construction that stops at the dropped acoustic tile ceiling
  - D. all of the above
18. Acoustic clouds like those used in the Royal Albert Hall in London
- A. provide diffuse reflection of sound
  - B. help absorb excess sound
  - C. only provide feedback to the performers
  - D. reduce the reverberation time
19. A technique to accurately predict the quality of a planned auditorium is
- A. auralization
  - B. physical scale models
  - C. simple ray tracing
  - D. all of the above

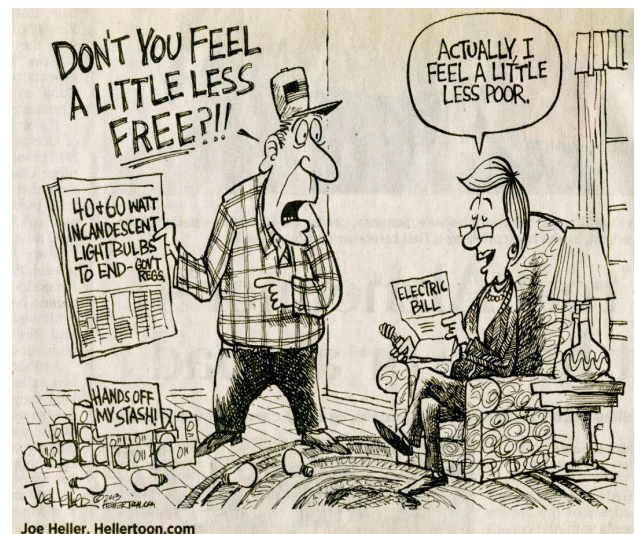


20. Performers in multi-purpose halls are most pleased with those alter acustic properties
- A. with an electronic reflected energy system
  - B. with an assisted resonance system
  - C. with an adjustable system as in the Chicago MCA auditorium
  - D. all of the above irritate performers

### Review Questions

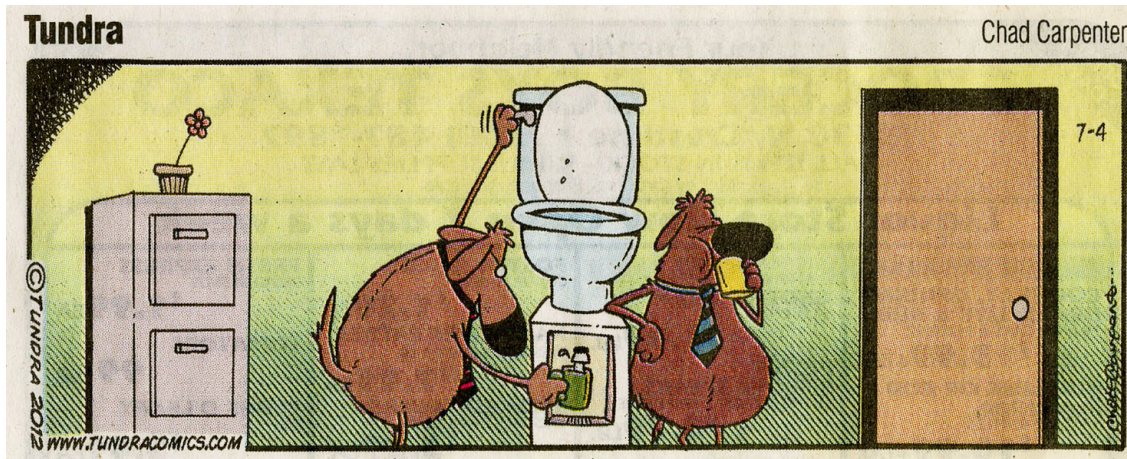
21. Which of the following is least likely to cause a glare problem?
- A. a clear north-facing window with a view of a black polished granite wall
  - B. a translucent west-facing window (no view)
  - C. a clear south-facing window with a view of a shady grove of trees
  - D. all of the above can cause extreme glare

22. If 16 foot candles illuminates a 50% reflective gray surface, its luminance will be
- A. 16 foot candles
  - B. 8 foot candles
  - C. 4 foot lamberts
  - D. none of the above
23. Which modeling method will give an indication of light distribution in space?
- A. the GDDM
  - B. AGi-32
  - C. physical models
  - D. all of the above
24. To increase the brightness of a room you can
- A. lower the IRC
  - B. install lightshelves
  - C. replace double pane glazing with triple pane
  - D. none of the above
25. A major advantage of computer models over hand calculation methods for daylight prediction is
- A. more accuracy
  - B. visualization of light in the space
  - C. contours of light distribution in space
  - D. all of the above
26. A successful daylighting scheme for an office building
- A. provides 75 foot candles
  - B. excludes direct sunlight
  - C. uses curtain wall construction
  - D. all of the above
27. LED lamps advantage over CFL lamps currently is
- A. much greater efficacy
  - B. lower first cost
  - C. programmable RGB color control
  - D. all of the above
28. Ceiling integrated can downlight fixtures with CFL lamps are most effective for
- A. ambient lighting in a large open space
  - B. integration with a daylighting scheme
  - C. directing light to a specific task
  - D. all of the above





29. Using the point source method to calculate light from three fixtures in a room
- A. gives the worst-case scenario for illumination
  - B. is the best way to calculate ambient light in the space
  - C. is impossible because light from different sources can't be added
  - D. none of the above
30. In terms of life-cycle costs, the most cost effective choice for desk lamp (fixture) is
- A. a 60-watt incandescent lamp
  - B. a 16-watt CFL (rated as a 60-watt replacement)
  - C. an 8-watt LED (rated as a 60-watt replacement)
  - D. an MR-16



31. European dual-flush toilets are classified in the US as
- A. low-flush
  - B. high efficiency
  - C. ultra low-flush
  - D. none of the above
32. The current water shortage in California is caused by
- A. the Western US pattern of recurring draughts
  - B. global warming
  - C. lax state code requirements
  - D. all of the above
33. Ancient Greek water practices include
- A. communal toilets
  - B. cisterns in amphitheaters
  - C. both of the above
  - D. none of the above
34. The best roofing choice for collecting potable water destined for a cistern is
- A. a green roof
  - B. a cedar shake roof
  - C. an asphalt composite roof
  - D. a metal roof

35. A score of zero on the SBSE revision of Malcolm Wells checklist indicates
- A. a seriously degenerative building
  - B. a building without environmental merit
  - C. a sustainable building
  - D. a regenerative building

36. Last year the planet set a modern day record of CO<sub>2</sub> in the atmosphere of
- A. 300 ppm
  - B. 350 ppm
  - C. 360 ppm
  - D. 400 ppm

37. To greatly reduce carbon emissions buildings must be designed to
- A. be LEED Platinum
  - B. meet the Living Building Challenge
  - C. meet Architecture 2030's guidelines
  - D. none of the above

38. The biggest potential financial impact of daylighted, sustainable buildings is
- A. greatly reduced carbon emissions
  - B. increased employee productivity
  - C. energy savings over the years
  - D. higher property value

39. Net-zero energy buildings can be most economically built
- A. by employing passive design strategies to minimize the EUI
  - B. by using PVs as both energy sources and shading devices
  - C. by considering the social and environmental costs of the building
  - D. none of the above

40. The most viable source of site-generated electricity for a tall building with a small floor-plate in an urban setting is
- A. vertical axis wind turbines
  - B. roof-top photovoltaic arrays
  - C. horizontal axis wind turbines
  - D. roof-top solar thermal

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

