

Arch 464  
ECS  
Final Exam  
Spring 2013

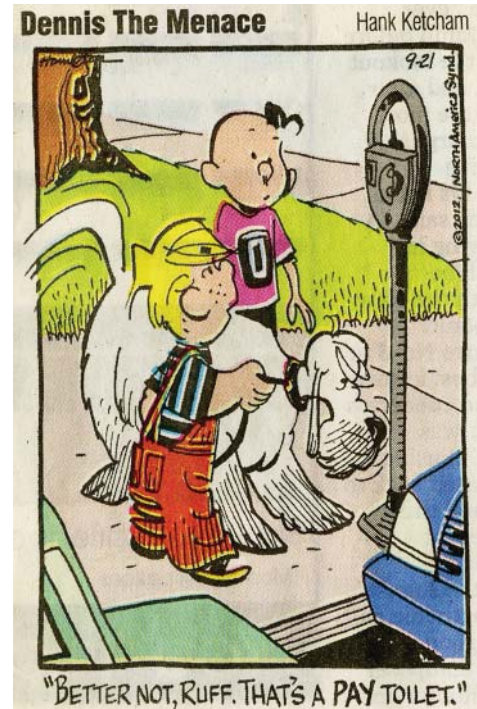
40 Multiple Choice Questions – Select the **best** answer for each one.

### New Questions

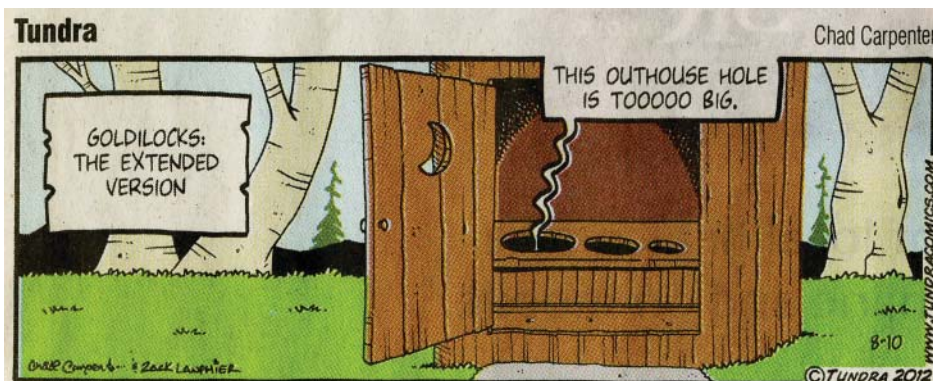


1. Hydraulic fracturing (fracking) can extract
  - A. coal
  - B. petroleum
  - C. gasoline
  - D. none of the above
2. Currently the U.S. energy use
  - A. totals about 100 quads
  - B. is about 43% efficient
  - C. wastes more than the total produced in 1960
  - D. all of the above
3. Bio-fuels cannot be made from
  - A. corn
  - B. elephant grass
  - C. algae
  - D. none of the above
4. The combustion fuel in the U.S. that currently makes a significant contribution to greenhouse gas build-up, which causes global climate change, is
  - A. coal
  - B. natural gas
  - C. petroleum
  - D. all of the above

5. The energy source with highest potential availability worldwide is
  - A. hydro power
  - B. nuclear power
  - C. solar power
  - D. conservation
  
6. The most cost-effective means of reducing greenhouse gas emissions is
  - A. conservation
  - B. converting to wind power
  - C. converting to solar power
  - D. converting to nuclear power
  
7. Solar thermal can be used to
  - A. generate electricity at a large scale
  - B. provide domestic hot water
  - C. provide hydronic space heating
  - D. all of the above
  
8. Sound travels fastest in
  - A. air
  - B. water
  - C. aluminum
  - D. the same speed in all of the above
  
9. In a free field, each time you double the distance from a point source of sound,
  - A. intensity is halved
  - B. intensity is reduced by 3dB
  - C. intensity is reduced by 6dB
  - D. none of the above
  
10. A project that demonstrates an effective use of a massive sound barrier is
  - A. Predock's New Mexico Heart Institute
  - B. Koolhaas' IIT Campus Center
  - C. Paley Park in NYC
  - D. all of the above
  
11. Acoustically absorptive panels hung vertically in a space have the advantage of
  - A. absorbing sound in two surfaces
  - B. exposing thermally massive ceilings
  - C. providing more surface area than ceiling-mounted panels
  - D. adding decorative architectural detail to the ceiling



12. An indoor space that is acoustically most like an outdoor space has
- A. an acoustic goal of silence
  - B. an acoustic goal of quiet
  - C. no acoustic goal
  - D. none of the above
13. Acoustically reflective concave walls
- A. focus sound
  - B. can create a whisper gallery
  - C. create the creep phenomenon
  - D. all of the above
14. Which of the following strategies can be used effectively for site and room noise mitigation?
- A. acoustic zoning
  - B. sound barriers
  - C. acoustic masking
  - D. all of the above
15. To calculate the reverberation time of a theater, you need to calculate
- A. total absorption of the theater
  - B. noise reduction in the theater
  - C. total sound intensity in the theater
  - D. all of the above
16. Impulse response diagrams give a visual indication of
- A. reverberation time
  - B. smoothness of sound decay
  - C. gaps in the arrival of reflected sound
  - D. all of the above
17. Wide halls like Amsterdam's Concertgebouw have one major weakness,
- A. they're more suitable for voice than musical performance
  - B. prime seats in the center of the hall have the poorest acoustics
  - C. they require electronic sound enhancement systems
  - D. all of the above



18. Surround halls compensate for the lack of reflective side walls by
- A. providing diffusely reflective tier facades
  - B. using reflective concave clouds in the ceiling
  - C. providing resonance chambers beneath the audience
  - D. all of the above
19. Arup's auralization technique allows designers to
- A. hear a simulated performance in their unbuilt work
  - B. compare acoustic quality of historic halls
  - C. evaluate the effectiveness of noise reduction strategies in reverberant spaces
  - D. all of the above
20. Ray tracing has been used effectively in
- A. early graphic models of acoustic spaces
  - B. laser pointer testing of physical models of acoustic spaces
  - C. Ecotect computer-based acoustic simulations
  - D. all of the above

### Review Questions

21. When is the Kalwall glazing on the west end of the Kibbie Dome a potential glare problem?
- A. never
  - B. late afternoon on a sunny day
  - C. when illuminated by light from the east-facing Kalwall facade
  - D. on cloudy days
22. An 8 candela light source will provide the same illumination at 4 feet as a 2 candela source at
- A. 1 foot
  - B. 2 feet
  - C. 4 feet
  - D. no distance, it's always brighter than the 2 candela source
23. Roof monitors with south facing glazing can effectively provide diffuse daylighting
- A. all year
  - B. only in the summer
  - C. only in the winter
  - D. if well-designed louvers or baffles are used
24. The hand calculation method for predicting daylight levels that doesn't require drawings of room geometry is
- A. the Graphic Daylight Design Method
  - B. the LBL nomograph
  - C. the BRS protractor method
  - D. all of the above do



25. A major advantage of computer models over hand calculation methods for daylight prediction is
- more accuracy
  - simultaneous modeling of daylight and energy use
  - display of light distribution in space
  - all of the above
26. The daylighted artificial sky being built in AAS third floor will be useful in daylighting model testing because it
- reproduces the illumination of a cloudy sky
  - models the distribution of light for a standard cloudy sky
  - reproduce the light quality of a cloudy sky
  - has a skylight that simulates direct sun
27. LED lamps that are replacements for CFL lamps currently have
- much greater efficacy
  - about the same efficacy
  - lower efficacy
  - much lower efficacy
28. The least efficient type of fixture is
- direct
  - direct/indirect
  - indirect
  - daylight
29. If the point source method determines that a source A, 12 feet away, will contribute 32fc to a surface and a source B, 24 feet away, will contribute 16fc, you are confident that
- source A is brighter
  - the surface receives at least 48fc
  - the surface receives no more than 48fc
  - exactly 48fc illuminate the surface
30. The newest version of living machines feature
- the use of aquatic animals
  - "tidal action" for treatment
  - a protective greenhouse
  - all of the above



31. The biological waste water treatment system nearest to Moscow, ID, is
- Moscow Waste Water Treatment Plant
  - in the San Francisco PUD building lobby
  - at IslandWood on Bainbridge Island, WA
  - in the UI Water Center in Boise, ID
32. A fixture that eliminates all black water from a residential building's waste stream is
- a waterless urinal
  - a composting toilet
  - an incinerating toilet
  - none of the above
33. Usually the effluent from the Moscow Waste Water Treatment Plant enters Paradise Creek cleaner than the water in the creek because
- MWWT plant is super effective
  - the agricultural lands pollute the creek
  - urban Moscow pollutes the creek
  - B & C above
34. Refuse found in UI campus dumpsters demonstrates that we
- mostly recyclable materials
  - mostly compostable materials
  - mostly trash that must go to the landfill
  - close to equal parts of trash, recyclables, and compostables



35. A score of zero on the SBSE revision of Malcolm Wells checklist indicates
- a seriously degenerative building
  - a building without environmental merit
  - a sustainable building
  - a regenerative building
36. The spaghetti charts for U. S. energy production and use show that since 1960
- energy efficiency has increased dramatically
  - energy efficiency has decreased dramatically
  - energy efficiency has never been above 50%
  - total energy use doubles every decade

37. The greatest financial benefit of a green building is
- A. water savings
  - B. energy savings
  - C. enhanced worker productivity
  - D. public goodwill
38. In order to mitigate global warming, buildings must be designed to
- A. greatly reduce carbon emissions
  - B. be sustainable
  - C. be self-sufficient
  - D. be LEED Platinum
39. A building with a low life cycle cost may have
- A. the lowest first cost
  - B. the lowest maintenance and operating costs
  - C. alternative energy systems that payback over a relatively short period
  - D. any of the above
40. European regulations now require that public buildings
- A. generate 10% of their own energy
  - B. comply to the Kyoto Accord
  - C. display an energy performance certificate
  - D. none of the above

Catch some rays, catch some *Zzzzzzzzzzs!*  
Hope you enjoyed the sweet loo illustrated final.  
Come back with new energy next fall!