Arch 464
ECS
Midterm II
Spring 2002

30 Multiple Choice Questions

1. An energy saving device that costs $500, has a 10-year life, and saves $60 in electricity each year
   A. is a good investment
   B. has an 8.333 year payback time
   C. both of the above
   D. requires life cycle cost analysis to determine its fiscal impact

Outhouses by Famous Architects: Frank Lloyd Wright's Flushing Water.

2. The life cycle cost of a building is dependent on
   A. the national inflation rate
   B. local banks' interest rates
   C. your client's time preference for money
   D. the federal government's tax incentive programs

3. A low energy cost in dollars is indicative of
   A. a low energy cost in Btus
   B. a high energy cost in environmental damage
   C. a high energy cost in human health
   D. none of the above

4. The best cooling system for a building
   A. has a first law efficiency of 100%
   B. has a second law efficiency of 300%
   C. use low-grade Btus to gather high grade Btus
   D. none of the above

5. When designing a heating system for a building the green architect should consider
   A. the societal cost of its fuel source
   B. the health cost of its fuel source
   C. the environmental cost of its fuel source
   D. all of the above

6. In the centuries before the industrial revolution the primary fuel was
   A. wood and other bio-fuels
   B. coal
   C. petroleum
   D. methane

7. Acid rain is associated with
   A. burning petroleum- and coal-based fuels
   B. nuclear power plants
   C. non ecological forestry practices
   D. all of the above

8. Using building integrated photovoltaic spandrel panels on the south façade of a building in Chicago
   A. provides a decorative surface comparable to marble in first costs
   B. can provide alternating current electricity if an inverter is used
   C. can reduce the building's impact on the environment
   D. all of the above

9. In the US no new nuclear energy plants have been built since the 1970s because
   A. they cause acid rain
   B. of safety and waste disposal costs
   C. they're a major cause of global warming
   D. all of the above

10. The new Columbia Gorge wind farms in Washington and Oregon are a sound investment because
   A. hydropower production is decreasing each year
   B. wind energy is the new energy source with the lowest cost per kilowatt
   C. government subsidies favor wind generation
   D. all of the above

11. Producing no pollutants, solar energy is currently used
   A. in photovoltaics to heat buildings
   B. in Sterling engines to produce steam-generated electricity
   C. in Salter's Ducks to produce hydroelectricity
   D. all of the above

12. Potential sources of site generated energy on a flat desert site in Arizona include
   A. photovoltaics
   B. low-head hydro
   C. vertical axis hydro-pneumatic generators
   D. all of the above

13. Last year's California energy crisis was caused by
   A. unscrupulous energy brokers
   B. a draught in California
   C. the highest per capita energy use in the nation
   D. all of the above

14. Architects and designers can reduce peak utility-provided energy use in buildings by
    A. employing effective daylighting schemes
    B. installing building-integrated photovoltaic systems
    C. specifying compact fluorescent lamps in place of incandescent lamps
    D. all of the above

15. A grid-connected photovoltaic system requires
    A. no batteries
    B. no inverter
    C. more generation than use
    D. all of the above

16. Stream borne pollution affects
    A. its entire drainage
    B. all locations downstream
    C. the whole watershed, only during flooding
    D. only the water table beneath it

17. The portion of the evapo-transpiration cycle that most assures water purity is
    A. evaporation
    B. rainfall
    C. percolation through the earth
    D. all of the above

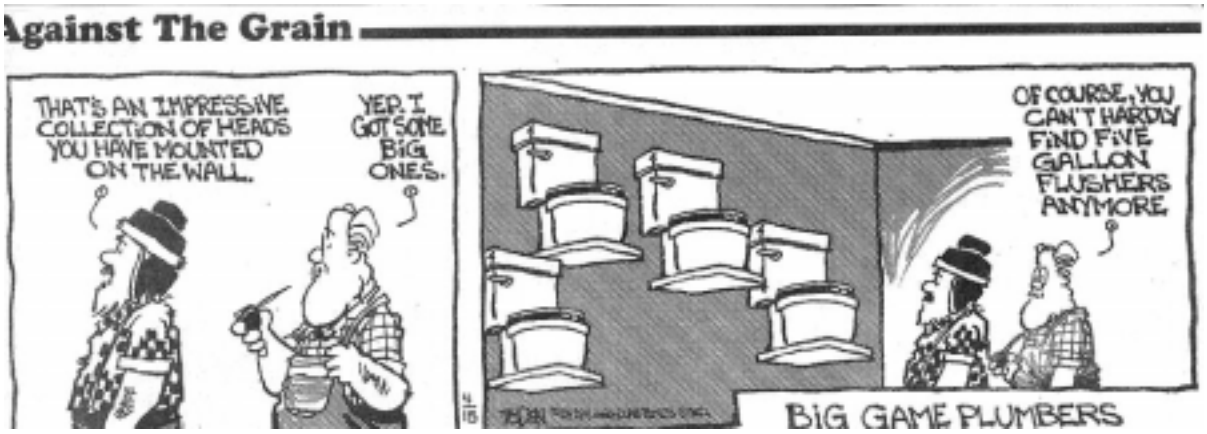
18. The size of the 100-year flood plain can be increased by
    A. creating a reservoir
    B. suburban development with impervious roads and walkways
    C. adding cisterns to every roof
    D. all of the above

19. Wetlands should be protected because
    A. they help clean water that runs through them
    B. they provide habitat for a variety of plants and wildlife
    C. they help mitigate flooding and protect rivers and bays from run-off pollution
    D. all of the above

20. Xeriscaping is
    A. abstaining from the use of pesticides and herbicides on a lawn
    B. using drought resistant native vegetation in place of a lawn
    C. painting dead grass green to simulate its healthy color
    D. all of the above

21. In the Western US water supply is at issue because
    A. the West is essentially a desert
    B. the great dam building era is over
    C. the West is draught prone
    D. all of the above

22. The way to conserve water in a home that can save the most water is to
    A. use low-flow lavs and showers
    B. install composting toilets
    C. irrigate the lawn with filtered grey water
    D. all of the above



23. The code-compliant toilet for new construction in the US is a
    A. 5 gallon/flush unit
    B. 3.5 gallon/flush unit
    C. 1.6 gallon/flush unit
    D. 0.5 gallon/flush unit

24. The type of water that is expelled from a domestic utility sink should be classified as
    A. white water
    B. grey water
    C. black water
    D. any of the above

25. Work on Paradise Creek in Moscow, supported by EPA, will
    A. mitigate flooding with bioswales
    B. protect the creek from parking lot and roadway run-off
    C. improve its habitat qualities by planting shade trees in the riparian zones
    D. all of the above

26. Waste water that can be treated on-site includes
    A. stormwater via filtering and storage in a cistern
    B. grey water via filtering for use in toilets and landscaping
    C. blackwater via a constructed wetland, like a living machine
    D. all of the above

27. A clivus multrum composting toilet requires
    A. a full heated basement beneath the entire building
    B. a vent stack to allow off-gassing
    C. waste collection to dispose of hazardous fecal remains
    D. all of the above

28. Green roofs are useful
    A. in urban areas to reduce storm water run-off
    B. only in natural areas to provide habitat
    C. only in suburban areas to help buildings blend into the landscape
    D. none of the above

29. An extensive green roof can
    A. support rooftop garden parties
    B. provide habitat for large plants
    C. absorb and retain storm water
    D. all of the above

30. Solid waste reduction is necessary because
    A. existing landfills are filling up and new ones are becoming harder to permit
    B. recycling has become a profitable major industry
    C. waste to energy plants have proven to be effective in reducing energy costs and reducing air pollution
    D. none of the above