

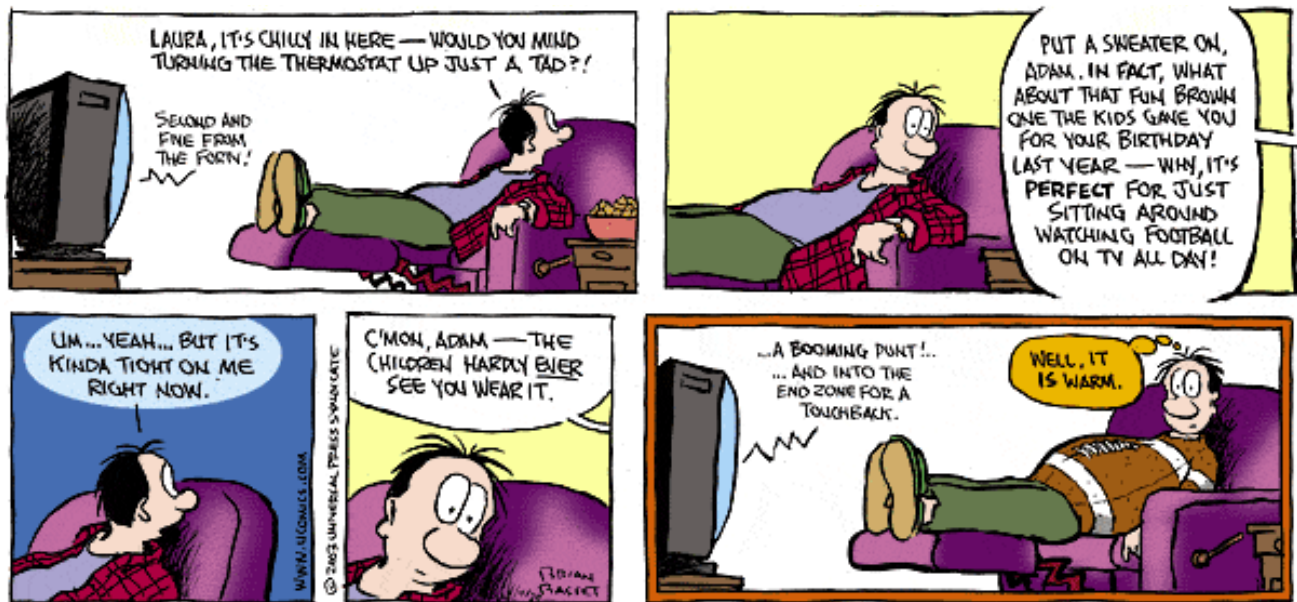
Arch 463
ECS
Fall 2018

Name _____

FINAL

40 Multiple Choice Questions

Part 1—Review Questions on material covered in Midterms I & II



- To remain comfortable in a hot environment, a person must
 - reduce their clo level to below 1.0
 - perspire
 - seek a breezy location
 - any of the above will help
- A nice dense conifer placed on the windward side of a building will,
 - block the prevailing wind
 - filter the prevailing wind
 - merely add oxygen to the prevailing wind
 - provide shade and block the prevailing wind
- In planning a summer vacation to Sequim, WA, you should
 - bring sun screen
 - pack an umbrella
 - bring slug repellent
 - none of the above

4. To gain full insight on the future effects of climate change you could model the passive performance of your ECS Lab building with
 - A. SBEED and morphed 2080 weather data
 - B. Sefaira and morphed 2080 weather data
 - C. Climate Consultant and morphed weather data
 - D. all of the above

5. The balance point temperature is not determined in part by
 - A. outdoor air temperature
 - B. internal heat gains
 - C. building envelope components' thermal properties
 - D. all of the above contribute to the determination

6. You would best use energy performance modeling during the design process to
 - A. evaluate design alternatives
 - B. determine energy use accurately
 - C. be awarded LEED points
 - D. all of the above

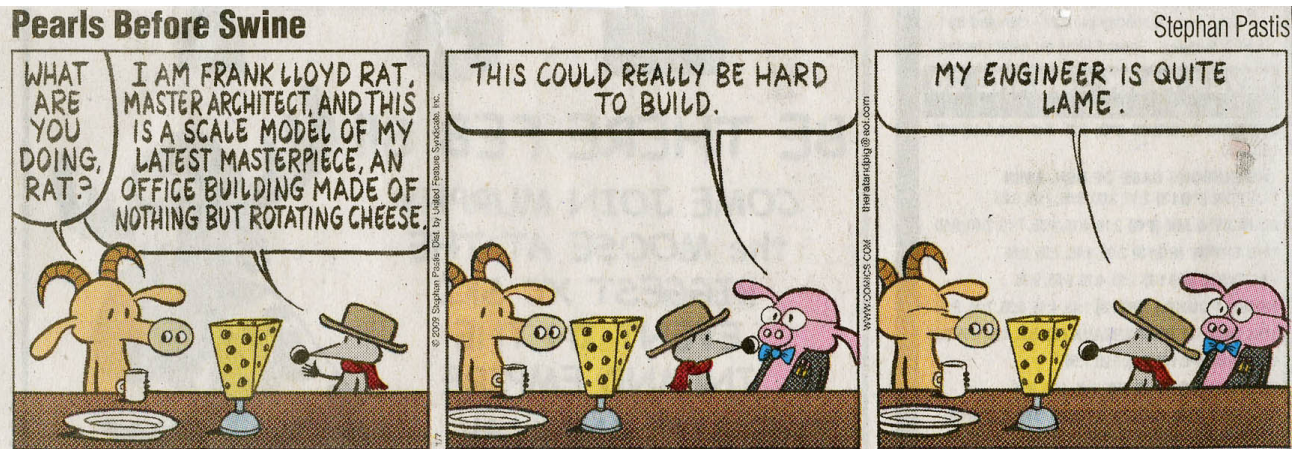
7. Local vernacular architecture can inspire contemporary high performance design by
 - A. specifying appropriate materiality
 - B. demonstrating successful passive strategies
 - C. dictating proper building configuration
 - D. all of the above

8. Which of the following is not a passive solar heating strategy
 - A. direct gain with thermal mass
 - B. a Trombe wall
 - C. a remote thermo-siphon
 - D. all of the above are passive

9. West-facing windows must be shaded to achieve effective passive cooling because
 - A. they have low R-values
 - B. their solar gain per square foot in summer is very high
 - C. they are susceptible to infiltration gains
 - D. all of the above

10. The composite R-value of a wall with R-30 insulation, R-6 windows, and an R-3 door is
 - A. R-39
 - B. the weighted average by area of all the components
 - C. R-13
 - D. R-3

11. BedZED was designed so that
- residents could have a one earth ecological footprint
 - its passive systems insure that all residents live within the earth's capacity
 - all innovative systems were robust and long lasting
 - none of the above
12. Occupants of Rogers' Chiswick Park "Enjoy Work" because
- the site has a pedestrian-only central park
 - exterior shading devices respond to weather conditions
 - work spaces are well daylighted
 - all of the above
13. If you've designed a typical high-rise with a central core, the most elegant thermal zoning can be attained by
- specifying glass curtain walls for all façades
 - giving executives corner offices
 - minimizing glazing on the east and west façades
 - specifying punched windows on all façades

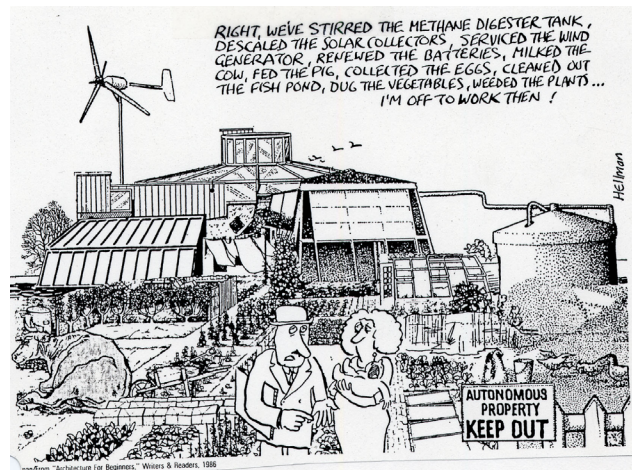


14. HEED modeling of passive performance of the Brillhart House showed that shifting the elongated axis from N-S to E-W had little effect on passive performance because
- the building is quite small
 - the wide, roofed porches are equally effective in both orientations
 - the building is raised off the ground
 - the building requires plenty of mechanical heating and cooling
15. for effective daylighting Viñoy's Pittsburgh Convention Center uses
- slit skylights
 - a near all-white interior scheme
 - orientation on an east-west axis
 - all of the above

16. You would choose an active solar heating strategy
- when seasonal heat storage is viable
 - when maximum heating efficiency is required
 - when PV energy is cost effective
 - when the climate features cloudy winters
17. The active solar collectors whose efficiency is least affected by cloudy skies are
- concentrating collectors
 - amorphous flat plate collectors
 - evacuated tube collectors
 - all of the above are equally affected
18. The common feature of active systems in the Mayhew house and the Bevans house is
- air collectors
 - thermal mass heat storage
 - radiant heating
 - none of the above
19. A double-duct HVAC system is a good choice for
- a large warehouse
 - a multistory mixed-use building
 - a dormitory
 - all of the above
20. Building integrated roof-top PVs can save first costs because
- they may replace conventional roofing
 - they may be integrated into a net metering scheme
 - they are a low-maintenance system
 - all of the above

Part 2—Questions on New Material

21. The Pompidou Center in Paris demonstrates
- systems integration as a design element
 - lack of concern for daylighting and shading
 - mechanical and structural systems exposed only on the exterior
 - all of the above



22. Skyscrapers' mechanical floors
- can be integrated with structure to resist lateral loads
 - are always hidden in basements and attics
 - are needed about one every 50 floors
 - none of the above

23. In the Larkin Building Frank Lloyd Wright used strong vertical elements
 - A. to house vertical circulation
 - B. to house ductwork for fresh air intake at the roof level
 - C. to provide shading for windows
 - D. all of the above

24. The roof-mounted cowls at Arup Campus in Solihul
 - A. are BMS managed shading devices
 - B. are glazed on their southeast and southwest sides
 - C. are combined daylight and ventilation providers
 - D. all of the above

25. For Arup Campus, Arup Associates used physical models to test
 - A. daylighting strategies
 - B. natural ventilation strategies
 - C. structural strategies
 - D. all of the above

26. A green wall inside a lecture hall is best placed
 - A. near the lectern
 - B. on one side wall
 - C. at the back of the room
 - D. all of the above are equally effective

27. The most likely place to discover poor indoor air quality is
 - A. a hotel room
 - B. a radiantly heated building
 - C. a rare book depository
 - D. a shower in a locker room

28. The rating system that awards credit for high indoor air quality is
 - A. LEED
 - B. the Living Building Challenge
 - C. the Well Building Standard
 - D. all of the above

29. A compression-based cooling system depends on
 - A. the fact that decompression of gas cools the gas
 - B. change of state from vapor to liquid heats the surrounding environment
 - C. change of state from liquid to vapor cools the surrounding environment
 - D. all of the above

30. An advantage of absorption-based cooling system in a hot climate is that it
 - A. can use solar heat for cooling
 - B. is less complex than compression-based cooling
 - C. is often coupled with a ground-source heat pump
 - D. none of the above

31. The least successful feature of the Chesapeake Bay Foundation HQ is
- its water catchment system
 - the installation of composting toilets
 - the building integrated PV system
 - its low-maintenance landscape

32. The Chesapeake Bay Foundation HQ near Annapolis is a great example of integrated design because

- it achieved LEED Gold
- its PV array makes it carbon-neutral
- all passive and active systems were considered early in the design process
- all of the above

33. The Crystal in London is an exemplary green building because

- it is totally passive
- it has a public dashboard that reports systems performance
- it is carbon neutral
- it is the headquarters for an alternative energy corporation

34. The Scottish Parliament is a green building that features

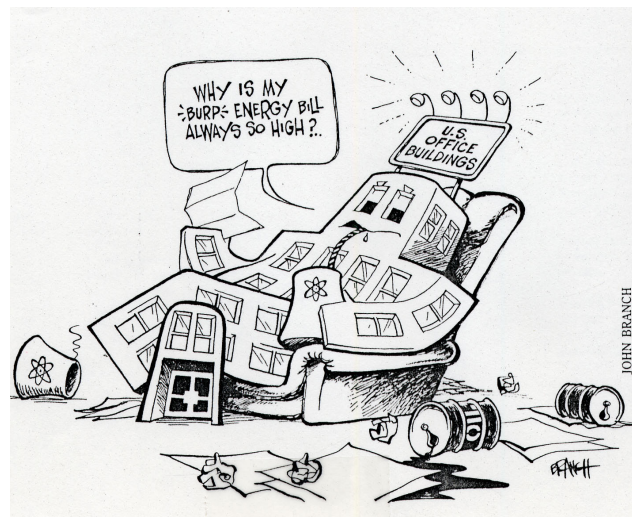
- green roofs that merge into the landscape
- a daylighted debate chamber
- annual reporting and improvement in setting/meeting green goals
- all of the above

35. London City Hall (GLA) features

- an effective shading strategy
- performance at levels well above the average green office building
- a natural ventilation strategy
- none of the above

36. Lessons learned from the operation of the John Hope Gateway in Edinburgh include

- vertical axis turbines shake buildings
- ETFE clerestories and skylights deteriorate quickly
- river rock drainage and solar panels present a performance conflict
- all of the above



37. The most energy efficient outdoor vertical circulation device is

- A. the Falkirk Wheel
- B. the funicular at CAT
- C. the elevator system in the Eiffel Tower
- D. Pei's entry elevator at the Louvre

38. Which of the following elevator types is used in the Statue of Liberty?

- A. traction
- B. hydraulic
- C. rack and pinion
- D. none of the above

39. Post occupancy evaluation (POE) is most effective

- A. before commissioning
- B. just after commissioning
- C. about 1 year after occupancy begins
- D. when done periodically over the life-span of the building

40. A smart-phone friendly occupant survey system is available from

- A. UC Berkeley's Center for the Built Environment
- B. the Usable Building Trust
- C. Kieran Timberlake Architects
- D. all of the above



"Since I went solar, I'm spared the gas emissions."

Done now! Have a happy and restful holiday!