

Arch 463
Fall 2017

Name _____

Midterm II

30 Multiple Choice Questions



1. Early experiments with double skin construction were built by
 - A. Frank Lloyd Wright
 - B. le Corbusier
 - C. Louis I. Kahn
 - D. all of the above

2. Modern double skin buildings may include, within the skin,
 - A. operable shading devices
 - B. winter gardens
 - C. both A and B above
 - D. none of the above

3. Dynamic façades can
 - A. not be naturally ventilated
 - B. provide dynamic shading
 - C. both A and B above
 - D. none of the above

4. The thermal elegance of a building's thermal zoning is determined by
 - A. its envelope design
 - B. its internal space planning
 - C. the internal gains of its program elements
 - D. all of the above

5. A high-rise building is liable to have
 - A. multiple thermal zones with the same orientation
 - B. adjacent floors in the same thermal zone
 - C. one or more central internal zones
 - D. all of the above

6. When a building's balance point temperature is lower than the outdoor temperature
 - A. the building requires heating to maintain comfort
 - B. the building needs neither heating nor cooling to maintain comfort
 - C. the building requires cooling to maintain comfort
 - D. none of the above

7. BedZED's green architecture feature that still works well after 15 years is
 - A. the living machine
 - B. the combined heat and power (CHP) plant
 - C. the passive ventilation system
 - D. none of the above

8. The main reason BedZED was developed was to
 - A. give residents the opportunity to experience one-planet living
 - B. provide completely affordable housing just outside London
 - C. to experiment with high-tech materials and equipment
 - D. all of the above

9. In an arid climate the most effective courtyard configuration to provide passive cooling to its surrounding building is
 - A. one with a central shade tree
 - B. one with a central fountain
 - C. one with lush vegetation throughout
 - D. a bare courtyard

10. Small windows often prove more effective than large windows because
 - A. they can frame views
 - B. they offer control of solar gain
 - C. their walls have higher overall R-values
 - D. all of the above

11. The balance point analysis for the Brillhart House in Miami reveals
 - A. only cooling is required to maintain year-round comfort
 - B. overall only a small amount of heating or cooling is required
 - C. a surprisingly high amount of heating is required in winter
 - D. its shading strategy is effective

12. The HEED model of the Brillhart House in Miami showed that
 - A. its N-S elongation is basically as effective as rotating it to an E-W elongation would be
 - B. passive techniques (no heat or air-conditioning) lead to severe overheating
 - C. natural ventilation air speeds are too high
 - D. all of the above

13. The HEED model for the Brillhart House in Miami using projected 2080 climate data predicts that

- A. its passive strategies will continue to be effective
- B. only solar heating will be needed
- C. it will severely overheat in summer in passive mode
- D. natural ventilation will not be effective at any time

14. Michael Reynolds' earthships near Taos, NM,

- A. treat all their toilet water to potable standards
- B. use only local materials in construction
- C. are not connected to the electrical grid
- D. all of the above

15. By using passive and low-energy techniques in design of the conservatory at Rio Grande Botanic Garden, Ed Mazria was able to

- A. achieve excellent growing conditions for both Mediterranean and Sonoran Desert plants
- B. regrettably increase costs to meet the performance requirements
- C. provide excellent human comfort
- D. all of the above

16. Modeling the Brillhart house in the passive mode with a Miami 2080 climate file proved

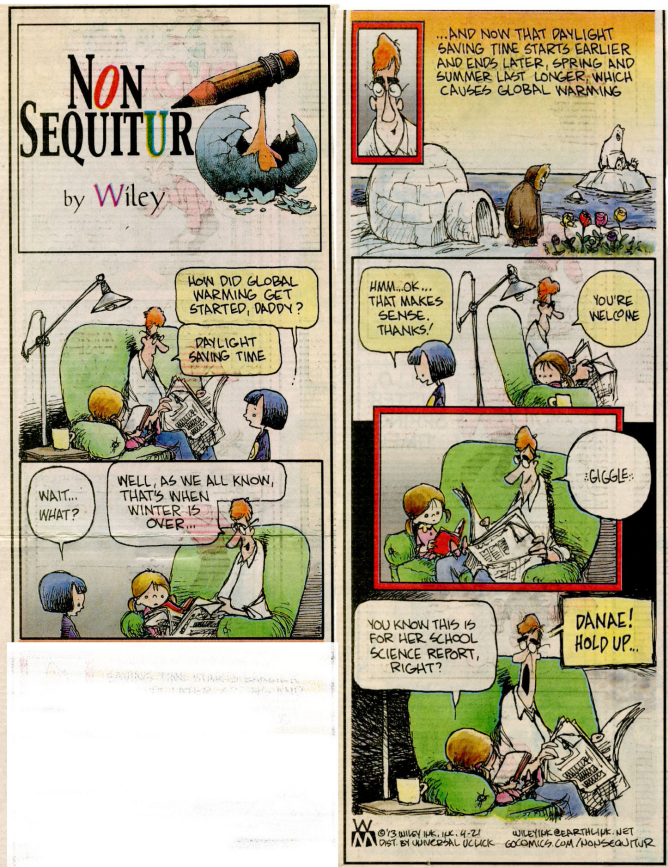
- A. that its passive strategies will continue to be effective
- B. that indoor temperatures could reach 100°F
- C. that winter heating would still be required
- D. none of the above

17. Village Homes in Davis, CA, is an exemplar of green living because

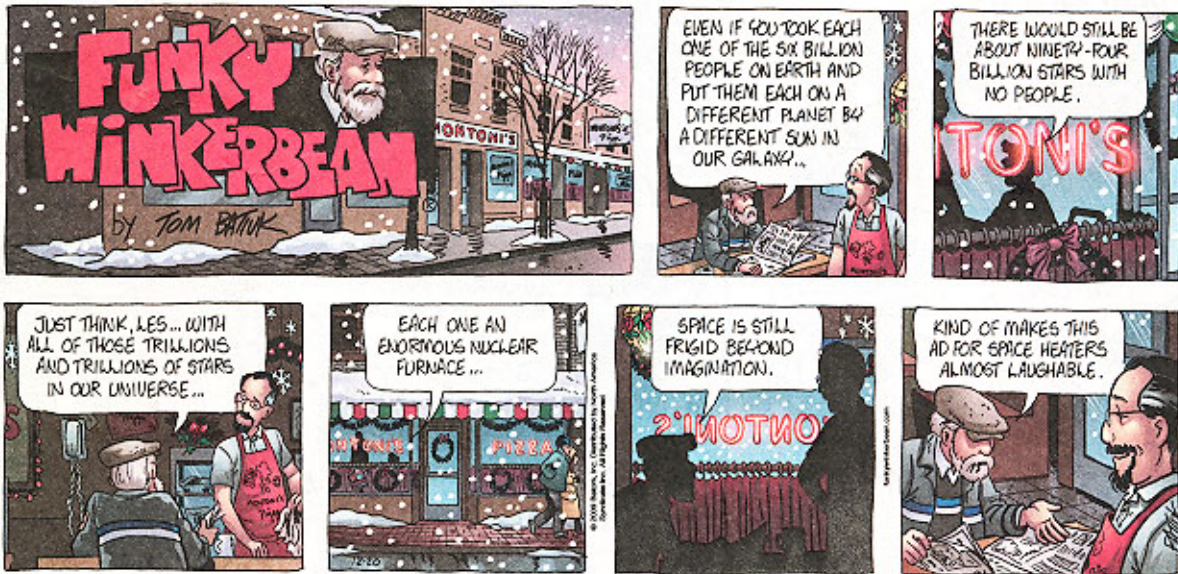
- A. it has bioswales to deal with storm water run-off on site
- B. it features community gardens and edible landscaping
- C. streets are oriented to encourage solar homes
- D. all of the above

18. Richard Rogers' Chiswick Park development is analogous to Village Homes in that

- A. it features passive solar building strategies
- B. it separates vehicular and pedestrian traffic
- C. it provides community space and activities
- D. all of the above



19. The extensive overhanging shading devices atop Richard Rogers' Chiswick Park development
- A. block most northern sun angles
 - B. act as lighting sources to the windows below
 - C. shade only the south façades
 - D. none of the above
20. Phased development of Richard Rogers' Chiswick Park
- A. allowed design improvements in the newer buildings
 - B. allowed replacement of the original buildings' awnings with perforated metal ones
 - C. both of the above
 - D. none of the above
21. The most advantageous feature of active solar buildings vs. passive solar buildings is
- A. the use of fans/pumps to transport heat
 - B. increased efficiency
 - C. potential seasonal storage of heat
 - D. all of the above
22. It would be most effective to pair an evacuated tube collector array with
- A. rock bed storage
 - B. water tank storage
 - C. none of the above
 - D. either A or B above
23. The Clearwater Times building features a solar roof for
- A. mainly space cooling
 - B. space heating only
 - C. electricity generation
 - D. none of the above
24. Photovoltaics can generate electricity when
- A. integrated with the roof
 - B. used on west-facing walls
 - C. used in windows
 - D. all of the above
25. Aerial views of London reveal PV arrays atop
- A. the Crystal
 - B. Blackfriars Railway Bridge
 - C. the Tate Modern Museum
 - D. all of the above
26. The recent rapid growth in PV installations is attributed to
- A. fear of global warming
 - B. declining PV costs and increasing PV efficiency
 - C. European regulations
 - D. all of the above



27. Large-scale HVAC systems are similar to active solar systems in that
- heating may be delivered by water or air
 - cooling may be delivered by water or air
 - heating and cooling may be delivered by water and air simultaneously
 - all of the above
28. Large scale all-air HVAC systems the most effective for a mixed use building would be
- single duct reheat
 - double duct
 - single duct variable volume (VAV)
 - four-pipe
29. Domestic radiant floor systems
- were pioneered by the Greeks and Chinese
 - are used for comfort and efficiency today
 - can be solar powered
 - all of the above
30. To improve overall thermal performance and to avoid the warm front, cold back syndrome common with wood stoves or fireplaces
- increase your clo level
 - provide outside air directly into the combustion chamber
 - install heatalators
 - none of the above