

Arch 463
Fall 2018

Name _____

Midterm II

30 Multiple Choice Questions



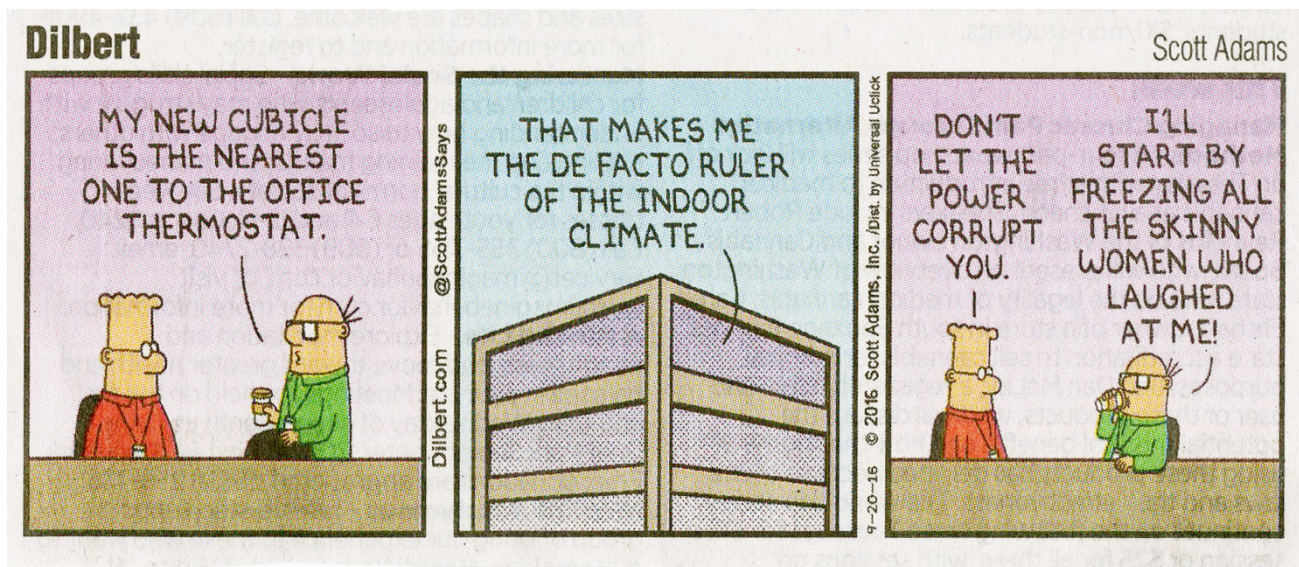
- The idea behind BedZED is
 - that residents may live with a one earth carbon footprint
 - to save as much energy as possible
 - to use only local materials
 - all of the above
- The most successful innovative system at BedZED is
 - the living machine
 - the combined heat and power system
 - the PV glazing system
 - all of the above
- Rogers' Chiswick Park has
 - fixed shading
 - movable shading
 - both A and B above
 - none of the above

4. The Chiswick Park theme, Enjoy Work, is achieved in part by
 - A. its envelope design
 - B. its internal space planning
 - C. organized events in the central park-like space
 - D. all of the above

5. Built in phases, Chiswick Park's buildings
 - A. show improved shading strategies over time
 - B. are all identical
 - C. show improved heating strategies over time
 - D. none of the above

6. When a building's balance point temperature is higher 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. The element that most affects the determination of thermal zones is
 - A. the climate
 - B. the building envelope design
 - C. the building program
 - D. none of the above



8. Two adjacent spaces are in the same thermal zone if
 - A. they have similar thermal needs
 - B. they have the same solar exposure
 - C. both of the above
 - D. none of the above, they're separate zones

9. A double skin façade is advantageous because
- A. it helps control the thermal environment
 - B. it can protect movable shading devices
 - C. it can block sound from the exterior
 - D. all of the above
10. The rule for separation of the glazing in a double façade is
- A. to allow enough room to contain operable shading
 - B. to allow for expanded steel maintenance walkways
 - C. to allow spaces wide enough for winter gardens
 - D. all of the above acceptable
11. A dynamic façade is most effective when
- A. it responds to passersby
 - B. sensors open and close it in response to the sun
 - C. it can act as a light shelf
 - D. all of the above
12. The HEED model of the Brillhart House in Miami showed that
- A. its N-S elongation is not 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. none 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. feature solar-aided composting toilets
 - B. use wind and sun to generate electricity
 - C. treat and reuse gray water on site
 - 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. Village Homes is analogous to Richard Rogers' Chiswick Park development in that
- A. it features passive solar heating strategies
 - B. it separates vehicular and pedestrian traffic
 - C. it provides bioswales for stormwater treatment
 - D. all of the above
17. Rafael Viñoy's Pittsburgh Convention Center is successfully daylighted because
- A. it has a fully translucent roof
 - B. it has a highly diffusely reflective interior
 - C. it's oriented on an elongated east-west axis
 - D. all of the above
18. When designing a courtyard to cool its surrounding building, the most effective thing to do is
- A. use toldos to control the sun
 - B. add a large shade tree to its center
 - C. make sure it "sees" as much of the night sky as possible
 - D. all of the above
19. The most cost-effective way to meet design and energy challenges is
- A. to design an elegant little big window
 - B. to use curtain walls for maximum daylighting and solar gain
 - C. to use punched windows with horizontal shading devices on all façades
 - D. to use a double wall façade with BMS controlled shading
20. Lou Kahn's Kimbell Museum features a strategy of
- A. diffuse top-lighting with daylight fixtures
 - B. sidelighting that "comes in through the cracks"
 - 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 remote collectors
 - B. greatly increased efficiency
 - C. the ability to control timing of energy use
 - D. all of the above
22. A concentrating collector's advantage over a flat plate collector is
- A. greater efficiency in all climates
 - B. the use of water in the collector
 - C. the use of phase change materials in the collector
 - D. none of the above
23. Henry Mayhew's active system in Coos Bay, OR, is unique in that it
- A. uses a reflective roof to increase efficiency
 - B. uses air-based collectors with a water storage tank
 - C. delivers conditioned air to the house via a fan-coil unit
 - D. none of the above

24. Photovoltaics have become more cost effective
- A. because the price of PV panels has decreased dramatically
 - B. in locations where net metering is allowed
 - C. because the efficiency of PV panels has increased considerably
 - D. all of the above

25. Photovoltaics can be incorporated in
- A. glazing systems
 - B. façade materials
 - C. walkways
 - D. all of the above

26. A building-integrated PV roof saves first costs because
- A. it produces electricity
 - B. it replaces conventional roofing materials
 - C. both of the above
 - D. none of the above



27. Domestic HVAC systems deliver conditioned air via
- A. forced air
 - B. hydronic floors
 - C. chilled beams
 - D. all of the above

28. A system that reduces the warm-front cold-back syndrome is
- A. a Greek hypocaust
 - B. a Russian fireplace
 - C. a wood stove with its own external air input
 - D. all of the above

29. Mixed-mode HVAC systems
- A. are only appropriate for mixed-use buildings
 - B. use both natural and forced ventilation
 - C. must use displacement ventilation
 - D. all of the above

30. The major advantage of a large all-water HVAC system over an all-air HVAC system is
- A. it delivers radiant heating or cooling
 - B. it uses small pipes versus large ducts to distribute thermal energy
 - C. it can be solar powered
 - D. none of the above