

Worksheet #4 | 13 February 2008

Name:

Chapter 4: Comfort and Design Strategies

1. Operative temperature is best described as:
 - (a) including the effects of dry bulb temperature and relative humidity
 - (b) the average of mean radiant temperature and air speed
 - (c) including the effects of dry bulb and mean radiant temperatures
 - (d) a temperature that describes how hot it “feels” in a space

2. The met is a unit of measure that is related to:
 - (a) the nature of the exterior (or meteorological) climate
 - (b) the average surface temperature of an interior environment
 - (c) the rate of evaporation from a person’s skin surface
 - (d) the level of activity in which a person is engaged

3. Heat exchange from the body to its surrounding environment can occur via four means of heat flow. These types of heat flow are:
_____, _____, _____, and _____

4. The “adaptive” model of thermal comfort suggests that:
 - (a) information technology can be used to adapt building conditions to meet the desires of the occupants
 - (b) people can be expected to take actions to improve their own thermal comfort
 - (c) the body will automatically adjust heat loss and gain to suit the surrounding conditions
 - (d) psychological comfort factors are at least twice as important as physical factors

5. ASHRAE’s most notable involvement in comfort issues is through:
 - (a) its publication of a thermal comfort standard (Standard 55)
 - (b) its development of the bioclimatic chart and timetable of climatic needs
 - (c) its publication of guidelines for design of passive cooling and heating systems
 - (d) actually, ASHRAE has no involvement with thermal comfort

6. Olgyay’s “climatic timetables” for various cities present:
 - (a) information that relates thermal comfort and annual climate conditions
 - (b) schematic diagrams of numerous passive heating and cooling approaches
 - (c) dates and times of all extreme weather occurrences
 - (d) information that relates thermal comfort to building occupancy schedules

7. Order the following passive heating design approaches from architecturally simplest to architecturally most complex: *indirect gain, isolated gain, and direct gain.*
_____-> _____-> _____

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Chapter 5: Indoor Air Quality

1. Problems with poor indoor air quality in buildings seem to be increasing because:
 - (a) the quality of the exterior air surrounding most buildings has decreased dramatically
 - (b) more aggressive indoor pollutants have developed due to global warming
 - (c) we spend more time indoors—in tighter buildings with more artificial materials
 - (d) material scarcities have resulted in the use of less efficient air filters

2. Which of the following best describes the sources of pollutants normally found in buildings:
 - (a) occupants, finishes, furnishings, and stored chemicals
 - (b) walls, floors, ceilings, and fenestration
 - (c) processes, equipment, occupants, finishes, and furnishings
 - (d) irritants, odors, and toxics

3. Which of the following best describes the general approaches to providing good IAQ:
 - (a) source control, filtration, exhaust, dilution, and maintenance
 - (b) panel filters, exhaust fans, dehumidifiers, and heat exchangers
 - (c) passive or active ventilation
 - (d) arrestance, adsorption, adhesion, and replacance

4. Outgassing as an IAQ concern refers to:
 - (a) the recharge cycle of desiccant dehumidifiers
 - (b) an unfortunate outcome of occupants eating some types of foods
 - (c) the tendency of electronic air cleaners to reverse polarity and dump collected dust
 - (d) the release of volatile organic compounds by finishes and furnishings

5. The stack effect is dependent upon which of the following:
 - (a) a temperature difference and a vapor pressure difference
 - (b) a temperature difference and a difference in elevation
 - (c) a difference in elevation and a narrow pipe or chase
 - (d) a continuous heat source (a fire or solar collector) and a difference in elevation

6. “Sick building syndrome” is best described as:
 - (a) a collection of ailments that seems to be associated with occupancy of a building
 - (b) an infectious disease particularly prevalent in passive solar buildings
 - (c) a rash that is experienced by occupants in mechanically conditioned buildings
 - (d) the biological growths in a building (generally called mold and mildew)

7. “Ventilation” is best described as:
 - (a) the circulation of air in an enclosed space
 - (b) the circulation of air through a filtration system or device
 - (c) the introduction of outdoor air into a building
 - (d) the removal of moisture from the air by refrigerants or desiccants