

Earth System Science 5: Homework #5 answer sheet (due 5/22/2008)

Name \_\_\_\_\_ Student ID: \_\_\_\_\_

**Turn in only this answer sheet.  
Keep the homework problem sheets.**

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**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

- 1) The terminal velocity of an object depends primarily upon:
  - A) its size.
  - B) the temperature.
  - C) its shape.
  - D) its composition.
  
- 2) The collision-coalescence process:
  - A) explains the formation of snow better than it explains the formation of rain.
  - B) is most frequent in cold clouds.
  - C) is dependent upon the different downward velocities of different-sized droplets.
  - D) is most common at high latitudes.
  
- 3) The process by which supercooled water droplets freeze onto falling ice crystals is called:
  - A) riming.
  - B) aggregation.
  - C) Bergeron bonding.
  - D) cold-cloud condensation.
  
- 4) Cloud droplet growth by condensation is very rapid for:
  - A) supercooled water droplets.
  - B) ice crystals.
  - C) large cloud droplets.
  - D) small cloud droplets.
  - E) none of the above
  
- 5) Given that the diameter of the average raindrop is 100 times that of the average cloud droplet, the volume of the average raindrop is about this many times greater than that of the average cloud droplet:
  - A) 100 times.
  - B) 1000 times.
  - C) 10000 times.
  - D) 1000000 times.
  
- 6) Of the following steps in the Bergeron process, which should be second?
  - A) the falling of ice crystals through the cloud
  - B) formation of rain drops
  - C) deposition of water vapor on ice
  - D) net evaporation from supercooled water droplets
  
- 7) Raindrops fall because:
  - A) they are small compared to atmospheric molecules.
  - B) they become large enough that gravity can pull them out of the sky.
  - C) they roll down isentropic surfaces and can't be stopped.
  - D) they are large compared to atmospheric molecules.
  
- 8) Aggregation:
  - A) is the first step of the Bergeron process.
  - B) is another term for riming.
  - C) is facilitated by a thin coating of water on ice crystals.
  - D) works best when the cloud temperature is -10 degrees Celsius or colder.
  
- 9) The largest form of precipitation is:
  - A) drizzle.
  - B) snow.
  - C) hail.
  - D) graupel.
  - E) rain.
  
- 10) Hail:
  - A) usually forms in cumuliform clouds.
  - B) requires very strong downdrafts.
  - C) most frequently occurs in sizes greater than two centimeters in diameter.
  - D) can provide the nucleus for graupel formation.

- 11) Collision-coalescence is the predominant cause of precipitation in this region:
- A) the Tropics.
  - B) mid-latitudes.
  - C) subpolar latitudes.
  - D) above the Arctic Circle.
- 12) The shape of a raindrop:
- A) is not affected by drag.
  - B) is initially that of a tear.
  - C) eventually resembles that of a disk.
  - D) remains constant throughout the journey from cloud to ground.
- 13) Snow results from all of the following processes, except:
- A) coalescence.
  - B) riming.
  - C) aggregation.
  - D) deposition.
- 14) Cool clouds:
- A) have regions with above-freezing temperatures.
  - B) contain substantial numbers of ice crystals at all elevations within the clouds.
  - C) contain no water droplets above 0 degrees Celsius.
  - D) typically form precipitation through the collision-coalescence process.