

ESS55: Earth's Atmosphere / Homework #7 (due 5/28/2009)**Multiple Choice**

Identify the letter of the choice that best completes the statement or answers the question.

- _____ 1. The fog that forms along the Pacific coastline of North America is mainly this type:
- radiation fog
 - upslope fog
 - frontal fog
 - advection fog
 - steam fog
- _____ 2. Fog that forms off the coast of Newfoundland is mainly a form of:
- advection fog
 - frontal fog
 - steam fog
 - radiation fog
 - upslope fog
- _____ 3. If fog is forming at Denver, Colorado, and the wind is blowing from the east, then the fog is most likely:
- advection fog
 - frontal fog
 - upslope fog
 - radiation fog
- _____ 4. In middle latitudes, which cloud will have the highest base?
- cirrostratus
 - cumulonimbus
 - altostratus
 - cumulus
- _____ 5. Which of the following associations is not correct?
- altostratus - middle cloud
 - cirrus - high cloud
 - stratocumulus - cloud of vertical development
 - cirrocumulus - high cloud
 - cumulonimbus - cloud of vertical development
- _____ 6. In middle latitudes, which cloud will have the lowest base?
- cirrostratus
 - stratocumulus
 - altocumulus
 - cirrus
- _____ 7. Cirrus clouds are composed primarily of:
- water droplets
 - water vapor
 - ice particles
 - salt aerosols
- _____ 8. An anvil-shaped top is most often associated with:
- cumulonimbus
 - cumulus congestus
 - altocumulus
 - cumulus humilis

Name: _____

- _____ 9. Hail is usually associated with what cloud?
- stratus
 - cumulus
 - stratocumulus
 - altocumulus
 - cumulonimbus
- _____ 10. The cloud with the greatest vertical growth is:
- cumulus congestus
 - cumulus humilis
 - cumulonimbus
 - cirrocumulus
- _____ 11. If the environmental lapse rate is 5°C per 1000 m and the temperature at the earth's surface is 25°C , then the air temperature at 2000 m above the ground is:
- 25°C
 - 30°C
 - 20°C
 - 15°C
- _____ 12. If a parcel of unsaturated air with a temperature of 30°C rises from the surface to an altitude of 1000 m, the unsaturated parcel temperature at this altitude would be about:
- 10°C warmer than at the surface
 - 10°C colder than at the surface
 - 6°C colder than at the surface
 - impossible to tell from the data given
- _____ 13. If an air parcel is given a small push upward and it falls back to its original position, the atmosphere is said to be:
- stable
 - unstable
 - isothermal
 - neutral
 - adiabatic
- _____ 14. The rate at which the actual air temperature changes with increasing height above the surface is referred to as the:
- environmental lapse rate
 - dry adiabatic rate
 - moist adiabatic rate
 - thermocline
- _____ 15. A rising parcel of air that does not exchange heat with its surroundings is an example of
- isothermal ascent
 - an adiabatic process
 - forced lifting
 - advection
- _____ 16. The rate at which the temperature changes inside a rising (or descending) parcel of saturated air is called the:
- environmental lapse rate
 - dry adiabatic lapse rate
 - moist adiabatic lapse rate
 - latent heat release rate

Name: _____

- _____ 17. At the earth's surface, a rising saturated air parcel would cool most rapidly when its temperature is:
- 10 °F
 - 32 °F
 - 50 °F
 - 68 °F
 - 80 °F
- _____ 18. The difference between the "moist" and "dry" adiabatic rates is due to:
- the fact that saturated air is always unstable
 - the fact that an unsaturated air parcel expands more rapidly than a saturated air parcel
 - the fact that moist air weighs less than dry air
 - the fact that latent heat is released by a rising parcel of saturated air
- _____ 19. The dry adiabatic lapse rate is _____ greater than the moist adiabatic lapse rate.
- never
 - sometimes
 - always
- _____ 20. Most thunderstorms do not extend very far into the stratosphere because the air in the stratosphere is:
- unstable
 - stable
 - too cold
 - too thin
 - too dry
- _____ 21. Which set of conditions, working together, will make the atmosphere the most stable?
- cool the surface and warm the air aloft
 - cool the surface and cool the air aloft
 - warm the surface and cool the air aloft
 - warm the surface and warm the air aloft
- _____ 22. If the environmental lapse rate is less than the moist adiabatic rate, the atmosphere is:
- conditionally unstable
 - absolutely stable
 - absolutely unstable
 - neutrally stable
- _____ 23. Which of the following environmental lapse rates would represent the most unstable atmosphere in a layer of unsaturated air?
- 3° C per 1000 m
 - 6° C per 1000 m
 - 9° C per 1000 m
 - 11° C per 1000 m
- _____ 24. In a conditionally unstable atmosphere, the environmental lapse rate will be _____ than the moist adiabatic rate and _____ than the dry adiabatic rate.
- greater, less
 - greater, greater
 - less, greater
 - less, less
- _____ 25. If an air parcel is given a small push upward and it continues to move upward on its own accord, the atmosphere is said to be:
- stable
 - unstable
 - buoyant
 - dynamic

Name: _____

- _____ 26. A completely dry air parcel which first rises and cools, and subsequently sinks and warms, is undergoing
- an irreversible pseudoadiabatic process
 - a reversible adiabatic process
 - an irreversible adiabatic process
- _____ 27. The most latent heat would be released in a _____ parcel of _____ saturated air.
- rising, warm
 - rising, cold
 - sinking, warm
 - sinking, cold
- _____ 28. An adiabatic chart is a useful tool for determining
- a station model
 - isobars
 - the wind speed
 - the lifting condensation level
- _____ 29. The name commonly used to describe the drier region observed on the downwind (leeward) side of a mountain range is:
- orographic
 - inversion region
 - rain shadow
 - compression region
- _____ 30. The temperature an air parcel would have if it were moved to a pressure of 1000 mb at the dry adiabatic rate is called the :
- descending temperature
 - adiabatic temperature
 - potential temperature
 - dew point temperature
 - base temperature

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Answer Section

MULTIPLE CHOICE

1. D
2. A
3. C
4. A
5. C
6. B
7. C
8. A
9. E
10. C
11. D
12. B
13. A
14. A
15. B
16. C
17. A
18. D
19. C
20. B
21. A
22. B
23. D
24. A
25. B
26. B
27. A
28. D
29. C
30. C

E 9.

A 17.

B 26.

A 27.

D 1.

C 10.

D 18.

D 28.

A 2.

D 11.

C 19.

C 29.

B 20.

C 3.

B 12.

C 30.

A 21.

A 4.

A 13.

B 22.

C 5.

A 14.

D 23.

B 6.

B 15.

A 24.

C 7.

C 16.

A 8.

B 25.