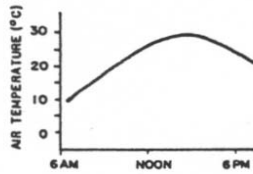
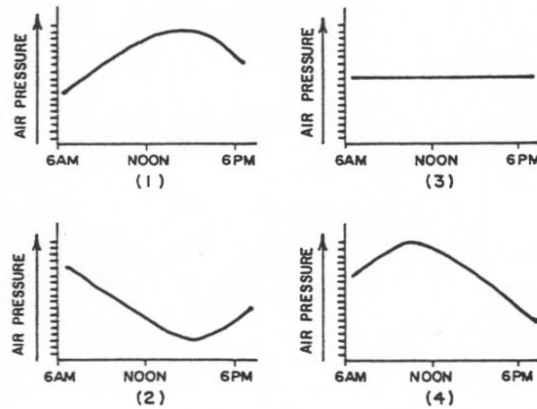


Atmospheric Variables Practice #2

The graph below shows air temperature for an area near the Earth's surface during a 12-hour period.



1. Which graph best illustrates the probable change in air pressure during the same time period?



2. Which of the following statements best describes the planetary wind patterns at 30°N?

- 1 Winds are converging.
- 2 Winds are diverging.
- 3 Winds rise up from lower altitudes.
- 4 Winds flow as high altitude jet streams.

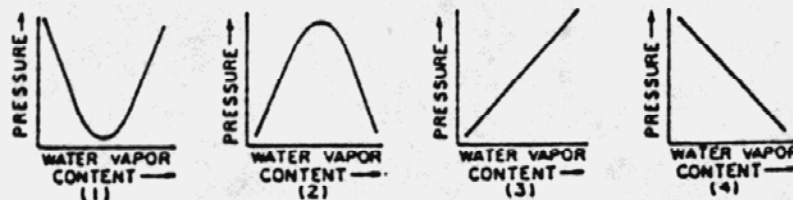
3. As the temperature of the atmosphere at a given location increases, the air pressure will most likely

- 1 decrease
- 2 increase
- 3 remain the same

4. As cool, dry air moves into a region, barometric pressure readings in the region will generally

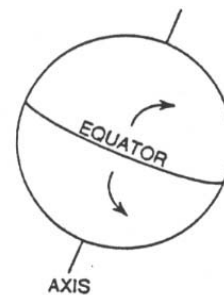
- 1 decrease
- 2 increase
- 3 remain the same

5. Which graph best shows the relationship between atmospheric pressure and water vapor content at the Earth's surface?



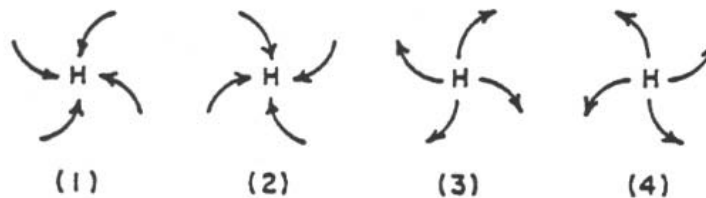
6. Which statement best explains why the air pressure is usually greater over the ocean than over the land during the daytime hours in the summer?
- 1 Air temperature is lower over the ocean.
 - 2 Air is more humid over the ocean.
 - 3 Prevailing winds are usually blowing from the land.
 - 4 Water absorbs heat from the land.
7. Two weather stations are located near each other. The air pressure at each station is changing so that the difference between the pressures is increasing. The wind speed between these two locations will probably
- 1 decrease
 - 2 increase
 - 3 remain the same

In the diagram to the right, the arrows represent the paths of moving fluids on the surface of the Earth.



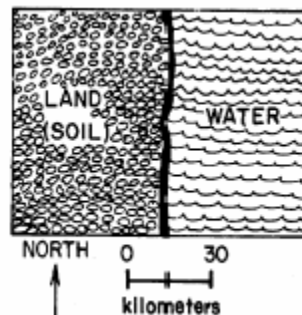
8. Which statement best explains why the fluid is deflected?
- 1 The Earth is revolving around the Sun.
 - 2 The axis of the Earth is tilted.
 - 3 The Earth is rotating on its axis.
 - 4 The Earth is moving away from the Sun.

9. The diagrams below represent surface wind directions on weather maps. Which diagram best represents the air circulation around a high pressure system (anticyclone) in New York State?

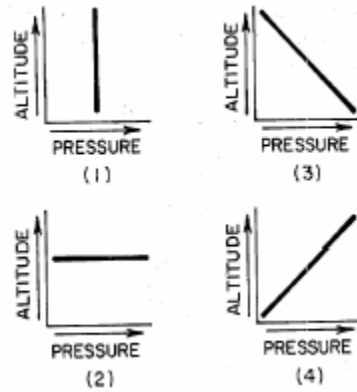


10. At the time of the highest temperature readings during the day, in which direction would the wind be blowing?

- 1 south to north
- 2 north to south
- 3 east to west
- 4 west to east



11. Which graph best represents the relationship between altitude and air pressure?

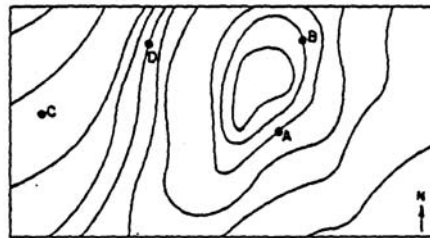


12. Which field quantity requires direction as a part of its complete description?

- | | |
|---------------|-----------------------|
| 1 humidity | 3 wind velocity |
| 2 temperature | 4 barometric pressure |

13. The map to the right represents a portion of an air pressure field at the Earth's surface. At which position is wind speed lowest?

- | | |
|-----|-----|
| 1 A | 3 C |
| 2 B | 4 D |



14. If the dewpoint is -5°C , at which temperature will condensation most likely form?

- | | |
|------------------------|------------------------|
| 1 40°C | 3 -4°C |
| 2 0°C | 4 -7°C |

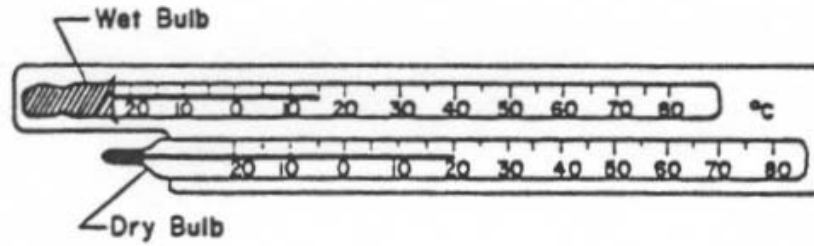
15. Which process most directly results in cloud formation?

- | | |
|-----------------|-----------------|
| 1 condensation | 3 precipitation |
| 2 transpiration | 4 radiation |

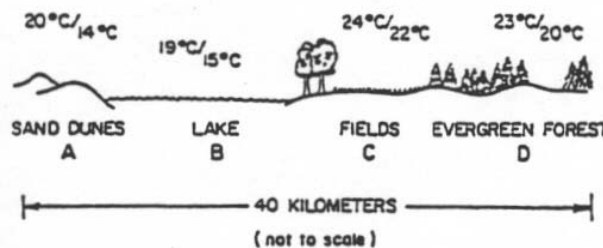
16. As the dewpoint temperature and the air temperature approach the same value, the probability of precipitation

- 1 increases
- 2 decreases
- 3 remains the same

Base your answers to **questions 17-18** on your knowledge of Earth Science, the Earth Science Reference Tables, and the diagram below. The diagram shows the readings on a psychrometer after it has adjusted to the atmospheric temperatures and humidity of a sample of air.



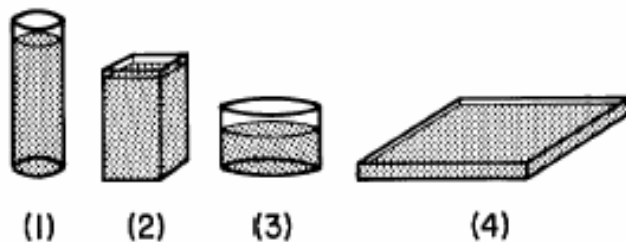
17. Based on the psychrometer, what is the approximate dewpoint?
- | | |
|----------|----------|
| 1 5.0°C | 3 15.0°C |
| 2 12.0°C | 4 20.0°C |
18. Which statement best explains the difference in the readings of the two thermometers?
- 1 evaporation removes energy from the wet bulb
 - 2 evaporation absorbs heat from the surrounding air
 - 3 condensation removes heat from the wet bulb
 - 4 condensation absorbs heat from the surrounding air
19. What is the approximate dewpoint temperature when the air temperature is 4°C and the wet-bulb temperature is -2°C
- | | |
|--------|---------|
| 1 -1°C | 3 -13°C |
| 2 -3°C | 4 -19°C |
20. What is the approximate dewpoint when the dry-bulb temperature is 1°C and the relative humidity is 65%?
- | | |
|--------|---------|
| 1 -5°C | 3 5°C |
| 2 1°C | 4 -10°C |
21. The diagram below shows the air temperatures/dewpoint temperatures 100 meters above four locations, A, B, C, and D, on the Earth's surface.



Which location has the least chance of precipitation?

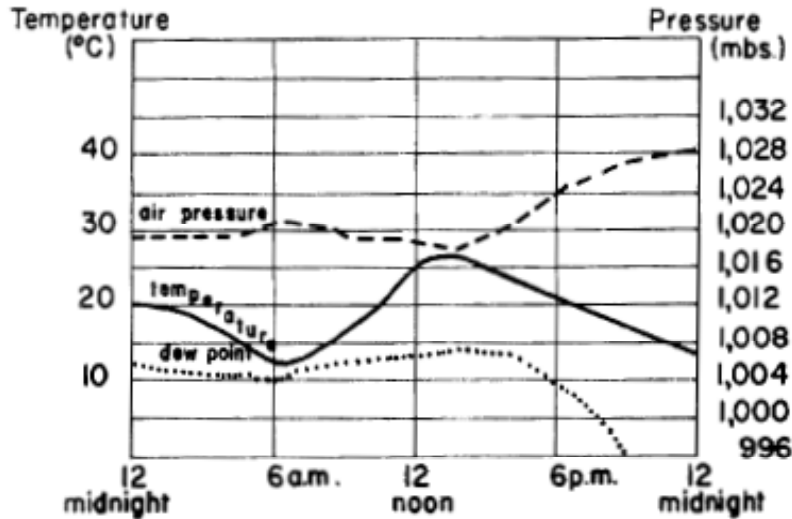
- | | |
|-----|-----|
| 1 A | 3 C |
| 2 B | 4 D |

22. Condensation will most likely occur in a given volume of air when the air is
- 1 saturated and contains no condensation nuclei
 - 2 saturated and contains condensation nuclei
 - 3 unsaturated and contains no condensation nuclei
 - 4 unsaturated and contains condensation nuclei
23. The rate of evaporation of water can be increased by
- 1 increasing air circulation
 - 2 decreasing surface area of the body of water
 - 3 increasing the amount of moisture in the air
 - 4 decreasing the air temperature
24. Two identical towels are hanging on a clothesline in a sunny location. One towel is wet and the other is dry. What is one reason that the wet towel feels cooler than the dry towel?
- 1 Water in the wet towel is evaporating.
 - 2 Water in the wet towel prevents the absorption of heat energy.
 - 3 The dry towel receives more heat energy from the Sun than the wet one does.
 - 4 The dry towel has more room for heat storage than the wet towel does.
25. Which event will most likely occur in rising air?
- 1 clearing skies
 - 2 cloud formation
 - 3 decreasing relative humidity
 - 4 increasing temperature
26. Which of the following is not a form of condensation?
- 1 rain
 - 2 frost
 - 3 dew
 - 4 clouds
27. All of the glass containers shown below contain the same amount of water and are receiving the same amount of heat energy. In a given amount of time, the most water vapor will evaporate from which container?



28. If air temperature measurements were taken at regular intervals from sea level to the stratopause, the measurements would most likely show that the air temperature
- 1 decreases, only
 - 2 increases, only
 - 3 remains the same
 - 4 decreases, then increases

Base your answers to **questions 29-33** on the graph below. The graph shows the temperature, dewpoint, and air pressure for a certain area over a 24-hour period.



29. The dewpoint at 6 a.m. is
- 1 10°C
 - 2 20°C
 - 3 30°C
 - 4 25°C
30. At which time is the capacity of the air the highest?
- 1 6 a.m.
 - 2 9 a.m.
 - 3 2 p.m.
 - 4 12 midnight
31. The relative humidity of this area is highest at
- 1 6 a.m.
 - 2 12 noon
 - 3 6 p.m.
 - 4 9 p.m.
32. What probably caused the temperature trend from midnight to 6 a.m.?
- 1 the formation of clouds
 - 2 the rising of air
 - 3 the cooling of the ground surface
 - 4 the passing of a warm front
33. What is the air pressure reading at 6 p.m.?
- 1 1012 mb
 - 2 1004 mb
 - 3 1028 mb
 - 4 1024 mb.