## Station Models and Severe Weather Review

1. On which station model would the present weather symbol * most likely be found?

(1)

(2)

(3)

(4)

Base your answer to question 2 on the weather map, which shows a low-pressure system over the eastern United States. Letters $A$ through $D$ represent weather stations.
2. Which station model correctly represents the barometric pressure at station $A$ ?

(1)

(2)

(3)

(4)

Base your answers to questions 3 through 5 on the station models below, which show various weather conditions recorded at the same time on the same day at four different cities.


Chicago, Illinois


Detroit, Michigan

3. Which wind speed was recorded at Detroit?
(1) 15 knots
(3) 35 knots
(2) 25 knots
(4) 45 knots
4. Which city had the lowest relative humidity?
(1) Chicago
(3) Buffalo
(2) Detroit
(4) Utica
5. Which weather symbol best represents the type of precipitation that was most likely occurring in Utica?
(1)

(2)
$\Delta$
(3)

(4)
6. Which station model correctly represents the weather conditions in an area that is experiencing winds from the northeast at 25 knots and has had a steady drop in barometric pressure of 2.7 millibars during the last three hours?

(1)

(2)

(3)

(4)
7. A weather station model is shown below.

What is the barometric pressure indicated by this station model?
(1) 0.029 mb
(3) 1002.9 mb
(2) 902.9 mb
(4) 1029.0 mb

8. In the United States, most tornadoes are classified as intense
(1) low-pressure funnel clouds that spin clockwise
(2) low-pressure funnel clouds that spin counter-clockwise
(3) high-pressure funnel clouds that spin clockwise
(4) high-pressure funnel clouds that spin counterclockwise

Base your answers to questions 9 and 10 on the graph below, which shows air temperature, dewpoint, and present weather conditions for a 23 -hour period at Dallas, Texas.

9. The thunderstorm that occurred between 11 p.m. and 12 midnight was most likely the result of
(1) the arrival of a warm front
(2) the arrival of a cold front
(3) an increase in the difference between air temperature and dewpoint
(4) an increase in both air temperature and dewpoint
10. Which weather condition was reported at Dallas when the air temperature was equal to the dewpoint?
(1) fog
(3) thunderstorm
(2) rain
(4) drizzle
11. Which station model shows the correct form for indicating a northwest wind at 25 knots and an air pressure of 1023.7 mb ?

(1)

(2)

(3)

(4)
12. Various weather conditions at LaGuardia Airport in New York City are shown on the station model below.

What were the barometric pressure and weather conditions at the airport at the time of the observation?
(1) 914.6 mb of pressure and smog
(2) 914.6 mb of pressure and a clear sky
(3) 1014.6 mb of pressure and smog
(4) 1014.6 mb of pressure and a clear sky


Base your answers to questions 13 through 16 on the satellite image below, which shows a Northern Hemisphere hurricane, and on your knowledge of Earth science.

13. What is the usual surface wind pattern around the eye of Northern Hemisphere hurricanes?
(1) clockwise and outward
(3) counterclockwise and outward
(2) clockwise and inward
(4) counterclockwise and inward
14. Which air mass is normally associated with the formation of hurricanes?
(1) continental tropical
(3) continental polar
(2) maritime tropical
(4) maritime polar
15. Clouds form in the hurricane because the air is
(1) sinking, expanding, and cooling
(3) rising, expanding, and cooling
(2) sinking, compressing, and warming
(4) rising, compressing, and warming
16. When the eye of this hurricane reaches $43^{\circ} \mathrm{N}$ latitude, this hurricane will most likely be pushed by planetary winds toward the
(1) northwest
(3) southwest
(2) northeast
(4) southeast
17. Weather data is normally recorded at positions $A, B, C$, and $D$ on the weather station model shown.

At which position should the measurements from a rain gauge be recorded?
(1) $A$
(3) C
(2) $B$
(4) $D$

18. Which cross section below best represents the conditions that cause early winter lake-effect snowstorms in New York State?

19. Which weather-station model shows an air pressure of 993.4 millibars?

(1)

(2)

(3)
20. On the map to the right, dark-gray areas represent regions of lake-effect snow on a December day.

Which New York State location appears to be experiencing a lake-effect snowstorm?
(1) New York City
(3) Plattsburgh
(2) Utica
(4) Watertown

21. What are the dewpoint and wind direction shown on the station model?
(1) $72^{\circ} \mathrm{F}$ and wind from the northeast
(2) $72^{\circ} \mathrm{F}$ and wind from the southeast
(3) $74^{\circ} \mathrm{F}$ and wind from the northwest
(4) $74^{\circ} \mathrm{F}$ and wind from the southwest


Weather station models for three New York State cities on the same day at the same time are shown below.


Niagara Falls (N)


Rochester (R)


Syracuse (S)
22. Which map shows the front that was most likely passing through Rochester at that time?

(1)

(2)

(3)

(4)
23. Arrows on the maps below show differences in the direction of winds in the region of India and the Indian Ocean during January and July. Isobar values are recorded in millibars.


Heavy monsoon rains usually occur in India during
(1) January, when winds blow from the land
(3) July, when winds blow from the ocean
(2) January, when winds blow toward high pressure
(4) July, when winds blow toward high pressure
24. The map below shows a typical position and average velocity of the polar front jet stream during two different seasons For the eastern United States, the change of the polar front jet stream from this summer position to this winter position causes

(1) warmer temperatures farther north and causes storms to move more slowly
(2) warmer temperatures farther north and causes storms to move more rapidly
(3) cooler temperatures farther south and causes storms to move more slowly
(4) cooler temperatures farther south and causes storms to move more rapidly

Base your answers to questions $\mathbf{2 5}$ through 28 on the weather map below. The map shows isobars and seven weather station models. Four of the weather stations are identified by letters $A, B, C$, and $D$.
25. Which New York State weather station had clear skies?
(1) Albany
(3) New York City
(2) Buffalo
(4) Syracuse
26. Which weather station had the highest relative humidity?
(1) $A$
(3) C
(2) $B$
(4) $D$
27. What was the probable air pressure, in millibars, at station $D$ ?
(1) 1015.0 mb
(3) 1021.0 mb
(2) 1017.0 mb
(4) 1036.0 mb

28. Which weather information shown at station $B$ was measured with an anemometer and weather vane?

(2)

(3)
29. Which map below shows the most likely storm track for a hurricane $(\boldsymbol{)}$ ) in the Atlantic Ocean?

30. A large number of thunderstorms occur in the southeastern United States. Which type of air mass is most likely the main source of the moisture that produces these thunderstorms?

1 continental tropical
2 continental polar

3 maritime tropical
4 maritime polar
31. Tornadoes occur when a very cold, dry air mass meets a very warm, wet air mass. Which two air masses would most likely form a tornado when they meet?
1 cP and cA
3 cP and mT
2 cT and mP
4 mP and mT

The map to the right shows the average yearly number of thunderstorms in the continental United States.
32. Approximately how many thunderstorms occur yearly in Albany, New York State?
115
335
225
445

Average Number of Thunderstorms Each Year


Base your answers to questions 33-37 on your knowledge of Earth Science and the satellite photograph to the right. In the satellite photograph, a tropical storm (white cloud swirl) is centered in the Gulf of Mexico. An outline of the southeastern part of the United States and the latitude-longitude system have been drawn on the photograph.

33. The center of the eye of the tropical storm on the satellite photograph is closest to
1 25N, 880W
$3240 \mathrm{~N}, 91^{\circ} \mathrm{W}$
2 91ㅇN, 240 W
$48^{\circ} \mathrm{N}, 25^{\circ} \mathrm{W}$
34. What type of air mass would most likely be associated with the storm in the satellite photograph?

1 warm and moist
2 warm and dry

3 cold and moist
4 cold and dry
35. Which map best represents the surface air pressure field of this tropical storm?
[The solid lines represent isobars.]

36. At the time this photograph was taken, the weather conditions at point $X$ could be described as

1 partial cloud cover with scattered precipitation
2 heavy cloud cover but not precipitation

3 heavy precipitation associated with the storm
4 clear skies and sunny
37. What is the primary source of moisture for this storm?
1 transpiration from tropical jungles
2 evaporation of ocean water
3 evaporation of river water
4 melting of southern glaciers

