

MY SO PRACTICE TEST

PRACTICE TEST

Instructions

- You have 20 minutes to complete this test.
- You may write your answers directly in the test.
- You may use any notes or resources you have created or collected.
- You may use a calculator and scratch paper if necessary.
- Good Luck!

Test Questions

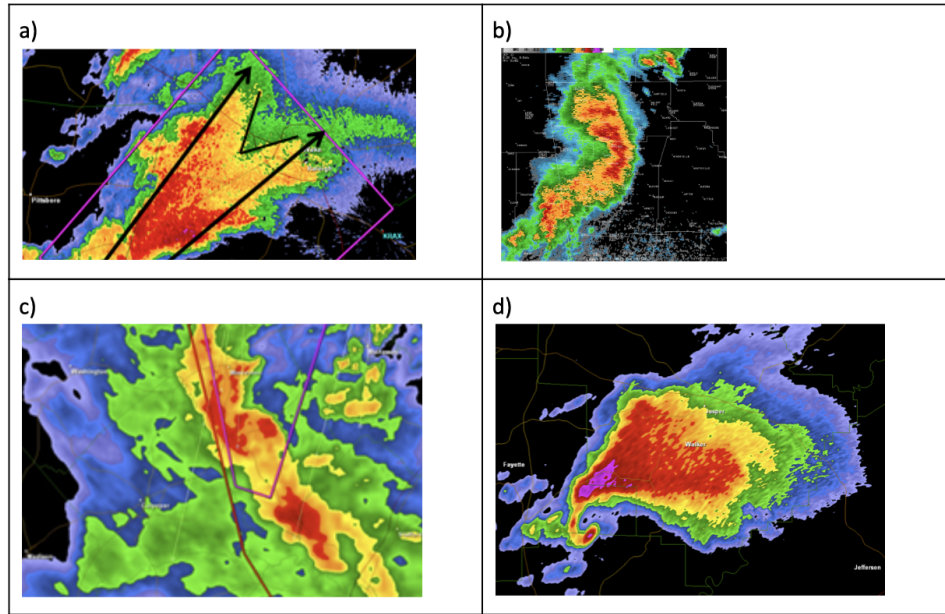
1. Which atmospheric scale is the largest?
 - a. Synoptic
 - b. Tropical
 - c. Mesoscale
 - d. Microscale
2. A forecaster wants to determine the favorability of a thermodynamic environment for convection at a point. Which would give him the clearest idea?
 - a. Flow on a 500mb map
 - b. Advection regime on a 850mb map
 - c. The parcel lapse rates on a Skew-T diagram
 - d. The pressure on a surface map
3. A strong, discrete thunderstorm has developed. You have 15 seconds to guess whether or not it'll rotate! Quick! Which map should you look at?
 - a. 300mb map
 - b. 500mb map
 - c. 850mb map
 - d. Surface map

4. You look at a skew-T graph and see a 50 degree difference between dewpoint and temperature below 850mb. Which of the following hazards is most likely?
 - a. Freezing rain
 - b. Fire weather
 - c. Tornadoes
 - d. Rain
5. During which stage of the Norwegian Cyclone Model does the occluded front make an appearance for the first time?
 - a. Dissipation
 - b. Intensification
 - c. Beginning
 - d. Mature
6. What is an occluded front, anyway?
 - a. The barrier between cold and warm air, moving from cold to warm
 - b. The barrier between dry and moist air, moving from dry to moist
 - c. The barrier from cool to cold air, moving from cold to cool
 - d. The barrier from cool to warm air, moving from cool to warm
7. Which of the following at 500mb is most indicative of surface low development?
 - a. Speed convergence
 - b. Speed divergence
 - c. Directional convergence
 - d. Directional divergence
8. Today's high is warmer than yesterday's high by about five degrees. Which of the following is most occurring?
 - a. Southerly flow parallel to isotherms at 850mb
 - b. Southerly flow perpendicular to isotherms at 850mb
 - c. Southerly flow parallel to isotherms at 500mb
 - d. Southerly flow perpendicular to isotherms at 500mb
9. Which of the following synoptic conditions is most favorable for updraft development?
 - a. A dry layer at 700mb
 - b. A moist layer at 850mb
 - c. Both A and B
 - d. Neither A nor B
10. Which of the following kinematic conditions on a skew-T is favorable for flash flooding?
 - a. Large temperature/dewpoint depression
 - b. A "fat" CAPE profile
 - c. High surface temperature
 - d. Strong low level wind
11. Where roughly do we define the tropics for meteorological purposes?
 - a. Roughly between 45 degrees north of the equator and 45 degrees south of the equator.
 - b. Roughly between 20 degrees north of the equator and 20 degrees south of the equator.
 - c. Only at regions directly on or touching the equator.
 - d. Roughly between 30 degrees north of the equator and 30 degrees south of the equator.

12. Which one of these is the primary parameter meteorologists use to classify tropical cyclone strength?
- Wind speed.
 - Barometric pressure.
 - Storm surge.
 - Precipitation rate.
13. Identify approximately where the ITCZ is located across all seasons.
- Directly on the equator.
 - 10 degrees north and south of the equator.
 - At varying latitudes above and below the equator.
 - 5 degrees north and south of the equator.
14. Why does the ITCZ occur?
- The rotation of the earth causes the winds to be weaker at the equator than anywhere else.
 - The converging trade winds meet and are forced to rise, thus causing them to condense and create a band of showers and precipitation.
 - The converging trade winds meet and completely stop, creating a calm area around the equator.
 - The heating from the sun causes hot air to rise, preventing any wind.
15. Describe El Nino.
- A decrease in water temperatures in the Tropical Atlantic, along with associated changes in weather.
 - An increase in water temperatures in the Subtropical Pacific, along with associated changes in weather.
 - A decrease in water temperatures in the Tropical Pacific, along with associated changes in weather.
 - An increase in water temperatures in the Tropical Pacific, along with associated changes in weather.
16. Describe La Nina.
- A decrease in water temperatures in the Tropical Atlantic, along with associated changes in weather.
 - An increase in water temperatures in the Subtropical Pacific, along with associated changes in weather.
 - A decrease in water temperatures in the Tropical Pacific, along with associated changes in weather.
 - The same exact effects as El Nino, except for the fact that the water temperatures increase instead of decreasing.
17. What is responsible for one wet and one dry season?
- The various tropical cyclones which bring rain back and forth.
 - The doldrums.
 - The rain belt.
 - None of the above.
18. Why are coastal regions at risk for frequent flooding? What features of tropical cyclones can cause flooding?
- Coastal regions are more at risk for tropical cyclones, wind speed.
 - Coastal regions are less at risk for tropical cyclones, wind speed.
 - Coastal regions are less at risk for tropical cyclones, storm surges.
 - Coastal regions are more at risk for tropical cyclones, storm surges.
19. Why do cumulonimbus clouds tend to produce the most lightning?
- Water is a good conductor of electricity and therefore the large cumulonimbus cloud acts like a large battery
 - The strong updrafts and downdrafts tend to build up static charges via.
 - Cumulonimbus clouds are the only clouds that can generate precipitation, which is a requirement for lightning
 - Cumulonimbus clouds do not actually produce lightning, it is simply a visual effect.

20. What are some of the types of clouds that a waterspout can form under?
- Cumulus Congestus, Cumulonimbus
 - Cumulonimbus, Nimbus
 - Cumulus Congestus, Altocumulus
 - Altostratus, Cirrocumulus
21. Which of the following objects may cause an unwanted signal in a radar observation?
- Birds
 - Insects
 - Tall buildings
 - All of the above
22. What happens for a typical radar pulse?
- A radar pulse is transmitted by a radar to a meteorological object, and some of it is scattered by the object.
 - A radar pulse is transmitted by a radar to a meteorological object, and some of it is scattered by the radar
 - A radar pulse is received by a radar from a meteorological object, and some of it is scattered by the radar.
 - A radar pulse is received by a radar from a meteorological object, and some of it is scattered by the object.
23. Which of these is a valid comparison between single and dual-pol radar?
- Singly polarized radar can provide as much information as dual-pol radar can.
 - Singly polarized radar has a larger bandwidth than dual-pol radar.
 - Singly polarized radar always has a higher frequency than dual-pol radar.
 - Singly polarized radar cannot distinguish between precipitation types.
24. What might be the advantage of a non-ground based radar?
- It might be significantly less expensive to maintain.
 - It might prove to be significantly more advanced than ground based radars.
 - It might provide more on-site information.
 - It might be able to always generate a far more detailed picture.
25. Name the radar signature for a tornado.
- Mesocyclone.
 - Supercell.
 - The red area.
 - Hook echo.
26. What might be a resultant problem if a meteorologist's radar is partially obstructed by a flock of Canada Geese?
- The meteorologist will get incredibly annoyed by the amount of noise and give up.
 - The meteorologist may potentially misinterpret the signal
 - The meteorologist will be unable to identify any other radar signals at all.
 - None, as radar can pass right through geese.

27. Which of the following is an example of a hook echo signature?



28. What are some of the ways to display radar data?

- Through parameters like speed of the radar wave and accumulated precipitation
- Through parameters like the reflectivity of the antenna and how much reflected radar energy comes back.
- Through parameters like accumulated precipitation and how much reflected radar energy comes back.
- Through parameters like number of non-meteorological vs meteorological objects as well as the speed of the radar wave.

29. Why might non-land based radars be useful in observing hurricanes?

- They might reach areas that land-based radars are unable to reach.
- They are the sole way of observing all hurricanes throughout their entire life cycles.
- They always provide a wider range of parameters than land based radars.
- None, there are absolutely zero advantages in using non-land based radars vs land based radars.

30. Which of these features of a hurricane are most easily directly identified by radar data only?

- The air pressure at all different points of the hurricane.
- The eye.
- The inflows and outflows of air.
- Its predicted path.

31. Which one of these best describes a typical radar image of a derecho?

- A slightly bent line.
- A hook echo.
- A round circle with banding.
- None, derechos do not show up on radar.

ANSWER KEY

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|-----|----------|-----|----------|-----|----------|
| 1. | A | 15. | D | 29. | A |
| 2. | C | 16. | C | 30. | B |
| 3. | C | 17. | C | 31. | A |
| 4. | B | 18. | D | | |
| 5. | D | 19. | B | | |
| 6. | C | 20. | A | | |
| 7. | D | 21. | D | | |
| 8. | B | 22. | A | | |
| 9. | C | 23. | D | | |
| 10. | D | 24. | C | | |
| 11. | D | 25. | D | | |
| 12. | A | 26. | B | | |
| 13. | C | 27. | D | | |
| 14. | B | 28. | C | | |



Practice Test Developed with Science Olympiad at Cornell



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