A. Figure 1 is the surface plot for 00 UTC 15 April 2012. Note the lines labeled 1, 2 and 3, and the two pressure systems labeled A and B (30 points)

1. Lines 1, 2 and 3 are boundaries of importance. Draw the correct symbols for Lines 1, 2 and 3 right on the map. (9 points)

2. Label the pressure systems A and B with the correct symbols. (10 points)

3. The weather information for Amarillo TX shows a coded pressure of 925. Decode that here: _______992.5 mb_____. (6 points)

4. Draw a box on the map that indicates the area in which the greatest likelihood of severe thunderstorms is usually (but not always) found. (5 pts)
B. Figure 2 is the 500 mb chart for 12 UTC 12 April 2012. Most of the 500 mb contours are labeled. (45 points)

1. Find and label correctly one ridge, one trough and one cyclone. (15 points)

2. Generally, the region of the chart with a 500 mb height of 582 dm has a temperature of around -10°C, and of 552 dm has a temperature of -25°C. Discuss in the space below how this is consistent with what you’d expect from the concept of the hypsometric equation. (Answer in complete sentences with subject, verb and object). (30 points)

The hypsometric relation states that the thickness of the atmosphere bounded by two isobaric levels is directly proportional to the mean temperature of that layer. If the the sea level pressure is nearly 1000 mb then the height of the 500 mb level should be roughly the 1000-500 mb thickness. For the relation to be consistent with the information on the chart, the higher the 500
mb height the warmer the temperature and vice versa. That clearly is demonstrated by the information given.

C. Figure 3 is the sounding for Oklahoma City at 0000 UTC 15 April 2012. Three levels on the parcel ascent curve are shown. (20 pts)

1. Level A corresponds to the _Lifting Condensation Level_________.(5pts)

2. Level B corresponds to the _Level of Free Convection_____.(5 pts)

3. Level C corresponds to the __Equilibrium Level______. (5 pts)

4. State whether the sounding is (a) absolutely stable; (b) conditionally unstable; or (c) absolutely unstable. (Circle correct choice).(5 pts)
E. You are provided with the $\frac{1}{2}$ degree radar reflectivity plot for Tulsa, OK for 2026 UTC 16 April 2012 (Figure 3 at rear of test). The arrows at A and B locate the general area of the hook portion of this radar echo. (15 points).

1. The arrow labeled A points to a _____ hook echo_____. (5 pts)
2. The arrow labeled B points to the center of the ___mesocyclone_________. (5 pts)
3. A cyclonically rotating thunderstorm updraft that persists for $\sim$30 minutes and characterizes a good depth of the updraft classifies that thunderstorm as a _____supercell________________________ (5 points)

Figure 3: $\frac{1}{2}$ deg reflectivity plot from Tulsa Oklahoma, 2026 UTC 16 April 2012