|  |  |  |
| --- | --- | --- |
| Title: | | **Quiz: Storms** |
| Started: | | March 12, 2012 11:40 PM |
| Submitted: | | March 13, 2012 12:10 AM |
| Time spent: | | [00:29:59](javascript:openNewWindow('viewAttemptEventsLog.dowebct?assmtAttemptId=8938811470291','ViewAccessLog','500','500')) |
| **Total score:** | | **17/20 = 85%** https://www.vista.ubc.ca/webct/images/dot_divide.gifTotal score adjusted by 0.0 https://www.vista.ubc.ca/webct/images/dot_divide.gifMaximum possible score: 20 |
| **1.** |  |
|  | |  |  | | --- | --- | | The most likely time of day for thunderstorm formation is late afternoon and early evening because \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | the warmest time of the day is at noon |  |  | | B. | solid Earth surfaces cool faster than oceanic surfaces |  |  | | Student ResponseC. | it is when the maximum amount of heat has accumulated | 100% | Student Response | | D. | trigger mechanisms are more frequent at this time |  |  | | E. | the Earth surfaces cool in the evening. |  |  | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | The saturated adiabatic lapse rate has less magnitude than the dry adiabatic lapse rate in a rising air parcel because \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | cloud droplets add weight to the rising air parcel, thereby reducing its buoyancy |  |  | | Student ResponseB. | condensation releases latent heat to partially compensate adiabatic cooling | 100% | Student Response | | C. | condensation releases latent heat to cause warming of the parcel with increasing height |  |  | | D. | inside a thunderstorm cloud the air rises too fast for the adiabatic cooling to catch up |  |  | | E. | evaporation of cloud droplets partially compensates the adiabatic warming |  |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | The location in North America that has the most frequency of hail AND of tornadoes is \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Florida |  |  | | B. | Alberta |  |  | | Student ResponseC. | Oklahoma | 100% | Student Response | | D. | Ontario |  |  | | E. | California |  |  | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | Rank these storm features by the rate that they rotate (from slowest to fastest). | | |  | | | | **Statement** | **Response** | **Value** | **Correct Match** | | --- | --- | --- | --- | | 1 slowest | wall cloud | Incorrect | mesocyclone | | 2 | mesocyclone | Incorrect | wall cloud | | 3 fastest | tornado | Correct | tornado | | | | Score: | 0/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | The LCL determines the height of \_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | cloud base | 100% | Student Response | | B. | cloud top |  |  | | C. | positive buoyancy |  |  | | D. | cloud electrification |  |  | | E. | tornadic rotation |  |  | | | | Score: | 1/1 | |  | | |
| **6.** |  |
|  | |  |  | | --- | --- | | According to the Saffir-Simpson Hurricane Intensity Scale \_\_\_\_\_\_\_\_\_ indicate stronger hurricanes. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | higher surface pressure in the eye and faster surface wind speeds | 0% |  | | B. | lower surface pressure in the eye and faster surface wind speeds |  | Student Response | | C. | higher surface pressure in the eye and slower surface wind speeds |  |  | | D. | lower surface pressure in the eye and slower surface wind speeds |  |  | | E. | greater damage to ships and coastal communities |  |  | | | | Score: | 0/1 | |  | | |
| **7.** |  |
|  | |  |  | | --- | --- | | Which is NOT a trigger mechanism for thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | lightning | 100% | Student Response | | B. | mountains |  |  | | C. | cold fronts |  |  | | D. | sea-breeze fronts |  |  | | E. | gust fronts |  |  | | | | Score: | 1/1 | |  | | |
| **8.** |  |
|  | |  |  | | --- | --- | | Most of our weather happens in the \_\_\_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | stratosphere |  |  | | B. | mesosphere |  |  | | C. | ionosphere |  |  | | Student ResponseD. | troposphere | 100% | Student Response | | E. | thermosphere |  |  | | | | Score: | 1/1 | |  | | |
| **9.** |  |
|  | |  |  | | --- | --- | | The rain-free center of a hurricane is called the \_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | spiral band |  |  | | B. | storm surge |  |  | | C. | eye wall |  |  | | D. | tropical cyclone |  |  | | Student ResponseE. | eye | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **10.** |  |
|  | |  |  | | --- | --- | | Which hazard or feature is NOT associated with individual thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | gust fronts |  |  | | B. | derechos |  |  | | C. | tornadoes |  |  | | Student ResponseD. | spiral band | 100% | Student Response | | E. | flooding |  |  | | | | Score: | 1/1 | |  | | |
| **11.** |  |
|  | |  |  | | --- | --- | | When water condenses in an air parcel, it \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | decreases the saturation mixing ratio rs |  |  | | B. | increases the mixing ratio (r) |  |  | | C. | increases the static potential of an air parcel |  |  | | Student ResponseD. | releases heat to the surrounding air | 100% | Student Response | | E. | takes heat from the surrounding air |  |  | | | | Score: | 1/1 | |  | | |
| **12.** |  |
|  | |  |  | | --- | --- | | Hurricanes can last a long time (a week or so) because \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | strong winds make high waves that evaporate warm water into the boundary layer | 100% | Student Response | | B. | the Bermuda Low keeps the storms in the tropics for many days as they intensify |  |  | | C. | Coriolis force is strongest at the equator, where hurricanes usually form |  |  | | D. | thunderstorms in the eye release large amounts of latent heat, which warm the core |  |  | | E. | hurricanes that form in early spring are in an environment with weak wind shear |  |  | | | | Score: | 1/1 | |  | | |
| **13.** |  |
|  | |  |  | | --- | --- | | A dry air parcel at 2 km altitude with a temperature of 10 °C lifts 2 km further. Its new temperature will be \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | 5 °C |  |  | | Student ResponseB. | -10 °C | 100% | Student Response | | C. | 10 °C |  |  | | D. | -5 °C |  |  | | E. | 0 °C |  |  | | | | Score: | 1/1 | |  | | |
| **14.** |  |
|  | |  |  | | --- | --- | | In visible-light weather satellite images, thunderstorms are recognizable by their \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | well-defined eye |  |  | | B. | wave-like appearance |  |  | | Student ResponseC. | tops casting shadows on the ground | 100% | Student Response | | D. | lightning causing the whole cloud to glow during the daytime |  |  | | E. | thunder that creates sound waves that propagate to the satellite |  |  | | | | Score: | 1/1 | |  | | |
| **15.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | Lightning often ranks in the top two of weather-related killers in North America. | 0% |  | | B. | Lightning can shoot out of the side of a storm and hit the ground ten miles away from the storm. |  |  | | C. | Most lightning-caused forest fires are triggered by positive cloud-to-ground lightning. |  |  | | D. | If you feel the hair standing up on your head or arms, there is a good chance that you are about to be struck by lightning in the next second or so. |  |  | | E. | Some lightning occur with no thunder but where there is thunder, there must be lightning. |  | Student Response | | | | Score: | 0/1 | |  | | |
| **16.** |  |
|  | |  |  | | --- | --- | | The longest lived storm is a \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornado |  |  | | B. | supercell thunderstorm |  |  | | C. | multicell thunderstorm |  |  | | Student ResponseD. | hurricane | 100% | Student Response | | E. | hailstorm |  |  | | | | Score: | 1/1 | |  | | |
| **17.** |  |
|  | |  |  | | --- | --- | | The official abbreviation for a thunderstorm cloud is \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | CB | 100% | Student Response | | B. | TS |  |  | | C. | CN |  |  | | D. | CU |  |  | | E. | TC |  |  | | | | Score: | 1/1 | |  | | |
| **18.** |  |
|  | |  |  | | --- | --- | | Most thunderstorms are \_\_\_\_\_\_ | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | supercell |  |  | | B. | squall-line |  |  | | C. | orographic |  |  | | Student ResponseD. | multicell | 100% | Student Response | | E. | pulse |  |  | | | | Score: | 1/1 | |  | | |
| **19.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE about thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | The cumulus stage consists of updrafts and downdrafts. |  |  | | Student ResponseB. | The mature stage consists of updrafts and precipitation. | 100% | Student Response | | C. | The cumulus stage usually has an anvil. |  |  | | D. | The dissipating stage consists of only updrafts. |  |  | | E. | The heaviest rain is likely during the dissipating stage. |  |  | | | | Score: | 1/1 | |  | | |
| **20.** |  |
|  | |  |  | | --- | --- | | The normal sequence of intensification before becoming a hurricane is \_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tropical depression, tropical disturbance, tropical storm |  |  | | B. | tropical depression, tropical storm, tropical disturbance |  |  | | C. | tropical storm, tropical disturbance, tropical depression |  |  | | D. | tropical disturbance, tropical storm, tropical depression |  |  | | Student ResponseE. | tropical disturbance, tropical depression, tropical storm | 100% | Student Response | | | | Score: | 1/1 | |  | | |

|  |  |  |
| --- | --- | --- |
| Title: | | **PQ1 Storms** |
| Started: | | March 12, 2012 9:35 PM |
| Submitted: | | March 12, 2012 9:39 PM |
| Time spent: | | [00:04:26](javascript:openNewWindow('viewAttemptEventsLog.dowebct?assmtAttemptId=8938398201291','ViewAccessLog','500','500')) |
| **Total score:** | | **4/5 = 80%** https://www.vista.ubc.ca/webct/images/dot_divide.gifTotal score adjusted by 0.0 https://www.vista.ubc.ca/webct/images/dot_divide.gifMaximum possible score: 5 |
| **1.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE regarding saturation? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student ResponseA. | Air cannot hold more water vapour than the saturation value. | 0% | | B. | Warmer air can hold more water vapour at saturation than colder air. |  | | C. | Saturated air has a relative humidity equal to the dew point temperature. |  | | D. | For saturated air the vapour pressure is less than the saturation vapour pressure. |  | | E. | Cloud-free saturated air is heavier than dry air at the same temperature. |  | | | | Score: | 0/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | Suppose you have an air parcel at height 1 km above ground with temperature 0 °C. If you lower this air parcel to the ground, its new temperature will be \_\_\_\_\_\_ °C. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | -20 |  | | B. | -10 |  | | C. | 0 |  | | Student ResponseD. | 10 | 100% | | E. | 20 |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | If twice as much water vapour condenses, then \_\_\_\_\_\_\_\_\_\_ times as much latent heat is released. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | 4 |  | | Student ResponseB. | 2 | 100% | | C. | 1 |  | | D. | 0.5 |  | | E. | 0.25 |  | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | If an unsaturated air parcel rises 2 km adiabatically, its temperature will \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | increase 20 °C |  | | B. | increase 10 °C |  | | C. | no change because adiabatic means no heat transfer |  | | D. | decrease 10 °C |  | | Student ResponseE. | decrease 20 °C | 100% | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | In mid-latitudes, typical mixing ratios range from \_\_\_\_\_\_ to \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student ResponseA. | 4 …. 15 grams water vapour / kg air | 100% | | B. | 0 …. 40 grams water vapour / kg air |  | | C. | –4 …. 4 grams water vapour / kg air |  | | D. | 50 …. 100% |  | | E. | 0 …. 1 |  | | | | Score: | 1/1 | |

|  |  |  |
| --- | --- | --- |
| Title: | | **PQ2 Storms** |
| Started: | | March 12, 2012 10:12 PM |
| Submitted: | | March 12, 2012 10:14 PM |
| Time spent: | | [00:01:16](javascript:openNewWindow('viewAttemptEventsLog.dowebct?assmtAttemptId=8938544209291','ViewAccessLog','500','500')) |
| **Total score:** | | **4/5 = 80%** https://www.vista.ubc.ca/webct/images/dot_divide.gifTotal score adjusted by 0.0 https://www.vista.ubc.ca/webct/images/dot_divide.gifMaximum possible score: 5 |
| **1.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | During a lightning storm, it is safe to use a cell phone or a cordless phone. |  | | B. | In a lightning storm, it is dangerous to be inside a metal car. |  | | C. | A dangerous place to be in a lightning storm is inside a metal airplane. |  | | D. | Lightning is colder than the surface temperature of the sun. |  | | Student ResponseE. | Lightning can come only from the base of the thunderstorm. | 0% | | | | Score: | 0/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | The eye of a hurricane has \_\_\_\_ pressure at sea level and \_\_\_\_ pressure at the tropopause | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | low...low |  | | Student ResponseB. | low...high | 100% | | C. | high...low |  | | D. | high...high |  | | E. | low...no |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | If an unsaturated air parcel rises 1 km, its temperature will \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | increase 9.8 °C |  | | B. | increase 6.0 °C |  | | C. | not change |  | | D. | decrease 6.0 °C |  | | Student ResponseE. | decrease 9.8 °C | 100% | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | Hurricanes do not form at the equator because \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | there is not enough sensible heat in the equatorial ocean |  | | B. | there is a strong cap overlying the boundary layer air above the equator |  | | Student ResponseC. | there is no Coriolis effect at the equator | 100% | | D. | the warm ocean layer is deeper than 150 m at the equator |  | | E. | oceans are warmest at the equator |  | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | For thunderstorms to thrive, they need to consume air containing a large amount of water vapour. Which moisture variable does NOT indicate a large amount of water in the air? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | high dew point temperature |  | | B. | high mixing ratio |  | | C. | high vapour pressure |  | | Student ResponseD. | high relative humidity | 100% | | E. | none of the above |  | | | | Score: | 1/1 | |

**Chapter 5**

**Main Quiz**

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | \_\_\_\_\_\_\_ links vertical and horizontal winds in circulations. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | rising warm moist air |  |  | | B. | air molecules |  |  | | C. | temperature |  |  | | D. | a cycle |  |  | | Student Response E. | **continuity** | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | The partial pressure exerted by water vapour in air is called \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **vapour pressure** | 100% | Student Response | | B. | water pressure |  |  | | C. | partial water |  |  | | D. | pore pressure |  |  | | E. | partial stress |  |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | In addition to the rotating tornadic winds, the other damaging winds from thunderstorms are straight-line winds near the \_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | beaver’s tail |  |  | | B. | altocumulus castellanus |  |  | | C. | wall cloud |  |  | | D. | mammatus clouds |  |  | | Student Response E. | **gust front** | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | The tornadoes that do the most damage have what rating on the Fujita scale? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | F1 |  |  | | B. | F3 |  |  | | Student Response C. | **F5** | 100% | Student Response | | D. | F7 |  |  | | E. | F9 |  |  | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Rotating thunderstorms are called mesocyclones. |  |  | | B. | Violent thunderstorms are called supercell storms. |  |  | | Student Response C. | **The flat bottom of a thunderstorm is the anvil.** | 100% | Student Response | | D. | Most thunderstorms are multicell thunderstorms. |  |  | | E. | Thunderstorm cells go through a cycle of evolution. |  |  | | | | Score: | 1/1 | |  | | |
| **6.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **Hurricanes can cross the equator.** | 100% | Student Response | | B. | Hurricanes have high pressure above the eye near the storm top. |  |  | | C. | Hurricanes have warm cores. |  |  | | D. | Hurricanes rarely form in the south Atlantic. |  |  | | E. | Hurricane winds near the surface rotate counterclockwise in the Northern Hemisphere. |  |  | | | | Score: | 1/1 | |  | | |
| **7.** |  |
|  | |  |  | | --- | --- | | The horizontal movement of sensible and latent heat by the wind is called \_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **advection** | 100% | Student Response | | B. | convection |  |  | | C. | an adiabat |  |  | | D. | radiation |  |  | | E. | transportation |  |  | | | | Score: | 1/1 | |  | | |
| **8.** |  |
|  | |  |  | | --- | --- | | Which is a high cloud? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | stratus |  |  | | B. | altostratus |  |  | | C. | cumulus humilis |  |  | | Student Response D. | **cirrus** | 100% | Student Response | | E. | stratocumulus |  |  | | | | Score: | 1/1 | |  | | |
| **9.** |  |
|  | |  |  | | --- | --- | | If an unsaturated air parcel rises 2 km adiabatically, its temperature will \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | increase 20 °C |  |  | | B. | increase 10 °C |  |  | | C. | no change because adiabatic means no heat transfer |  |  | | D. | decrease 10 °C |  |  | | Student Response E. | **decrease 20 °C** | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **10.** |  |
|  | |  |  | | --- | --- | | Which is NOT a trigger mechanism for thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **lightning** | 100% | Student Response | | B. | mountains |  |  | | C. | cold fronts |  |  | | D. | sea-breeze fronts |  |  | | E. | gust fronts |  |  | | | | Score: | 1/1 | |  | | |
| **11.** |  |
|  | |  |  | | --- | --- | | Given the saturation vapour pressure curve below, an air parcel at 20 °C and vapour pressure 6 kPa is \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **supersaturated** | 100% | Student Response | | B. | saturated |  |  | | C. | unsaturated |  |  | | D. | dry |  |  | | E. | insufficient information to determine |  |  | | | | Score: | 1/1 | |  | | |
| **12.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Most tornadoes are made visible by cloud droplets and debris. |  |  | | Student Response B. | Tornadoes are violently-rotating columns of air in contact with the ground. | 0% |  | | C. | Most violent tornadoes come from supercell thunderstorms. |  |  | | D. | **Most tornadoes occur on the leading edge (NE side) of a supercell thunderstorm.** |  | Student Response | | E. | A "tornado outbreak" is when many tornadoes occur during 1 or 2 days. |  |  | | | | Score: | 0/1 | |  | | |
| **13.** |  |
|  | |  |  | | --- | --- | | Which is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | **The MAJOR hazard associated with hurricanes is the strong winds.** | 100% | Student Response | | B. | The eye is a structure usually found in the center of hurricanes. |  |  | | C. | Stratiform clouds are generally layered clouds. |  |  | | D. | It is possible to survive a tornado by getting in a basement or "safe room". |  |  | | E. | The most favourable month for North Atlantic hurricanes is September. |  |  | | | | Score: | 1/1 | |  | | |
| **14.** |  |
|  | |  |  | | --- | --- | | Hurricanes that hit the Canadian east coast are usually \_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | coming from the east |  |  | | B. | rotating clockwise |  |  | | C. | intensifying |  |  | | Student Response D. | **dying** | 100% | Student Response | | E. | category 3 or greater on the hurricane intensity scale |  |  | | | | Score: | 1/1 | |  | | |
| **15.** |  |
|  | |  |  | | --- | --- | | The stage of a thunderstorm cell that has both updraft and downdraft is called the \_\_\_\_\_\_\_ stage. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | embryo |  |  | | B. | nucleus |  |  | | C. | cumulus |  |  | | Student Response D. | **mature** | 100% | Student Response | | E. | dissipating |  |  | | | | Score: | 1/1 | |  | | |
| **16.** |  |
|  | |  |  | | --- | --- | | The longest lived storm is a \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornado |  |  | | B. | supercell thunderstorm |  |  | | C. | multicell thunderstorm |  |  | | Student Response D. | **hurricane** | 100% | Student Response | | E. | hailstorm |  |  | | | | Score: | 1/1 | |  | | |
| **17.** |  |
|  | |  |  | | --- | --- | | Thunderstorm cells have all updraft (no downdrafts, no rain) in the \_\_\_ stage of their life cycle. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | cirrus |  |  | | B. | mature |  |  | | C. | stratus |  |  | | D. | dissipating |  |  | | Student Response E. | **cumulus** | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **18.** |  |
|  | |  |  | | --- | --- | | Most thunderstorms form in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | stratosphere |  |  | | B. | hydrosphere |  |  | | C. | exosphere |  |  | | Student Response D. | **troposphere** | 100% | Student Response | | E. | mesosphere |  |  | | | | Score: | 1/1 | |  | | |
| **19.** |  |
|  | |  |  | | --- | --- | | Measurement of rainfall rate from a thunderstorm gives an indication of \_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | the amount of evaporation inside the storm |  |  | | B. | the depth of the storm |  |  | | C. | the width of the storm |  |  | | D. | the amount of cloud condensation nuclei in the storm |  |  | | Student Response E. | **the net heating in the storm** | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **20.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Tornado outbreaks are when many tornadoes occur in one day to a week. |  |  | | B. | The center of tornado alley is near Oklahoma. |  |  | | Student Response C. | **Tornadoes are violently rotating horizontal columns of air.** | 100% | Student Response | | D. | Hook echoes in weather radar images don't always indicate tornadoes. |  |  | | E. | The Torro scale is used to classify tornado strength. |  |  | | | | Score: | 1/1 | |

**PC**

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | Heavy precipitation is a good indication of an intense thunderstorm because it implies \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | a strong inflow of humid air |  | | Student Response B. | strong rotation about the mesocyclone | 0% | | C. | an effective flanking line |  | | D. | that a large anvil tops the storm |  | | E. | significant latent heat release |  | | | | Score: | 0/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | \_\_\_\_\_\_\_ links vertical and horizontal winds in circulations. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student Response A. | rising warm moist air | 0% | | B. | air molecules |  | | C. | temperature |  | | D. | a cycle |  | | E. | continuity |  | | | | Score: | 0/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | The location in North America that has the most frequency of hail AND of tornadoes is \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student Response A. | Florida | 0% | | B. | Alberta |  | | C. | Oklahoma |  | | D. | Ontario |  | | E. | California |  | | | | Score: | 0/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | Which is FALSE? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | The anvil is a structure usually found at the top of thunderstorms. |  | | B. | The most favourable time for thunderstorms is about noon. |  | | C. | Thunderstorms ultimately get their energy from the sun. |  | | D. | Advection is the process that can move thunderstorm fuel from its creation location. |  | | Student Response E. | Vertical and horizontal motions are coupled by the continuity effect. | 0% | | | | Score: | 0/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | A parcel of air below its lifting condensation level \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | has a temperature equal or less than its dew point temperature. |  | | B. | has a mixing ratio that increases as it rises. |  | | Student Response C. | **has a saturation mixing ratio that decreases as it rises.** | 100% | | D. | contains cloud droplets from water vapor condensed into CCN. |  | | E. | simultaneously cools adiabatically and warms from the release of latent heat. |  | | | | Score: | 1/1 | |

|  |  |
| --- | --- |
| **.** |  |
|  | |  |  | | --- | --- | | Most thunderstorms form in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | stratosphere |  | | B. | hydrosphere |  | | C. | exosphere |  | | Student Response D. | **troposphere** | 100% | | E. | mesosphere |  | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | Which is NOT a measure of humidity? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | mixing ratio |  | | B. | relative humidity |  | | C. | vapour pressure |  | | D. | hydrometer |  | | Student Response E. | dew-point temperature | 0% | | | | Score: | 0/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | Tornadoes usually \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | rise to merge with the rotating wall and funnel cloud |  | | B. | are associated with calm, blue skies at the center of the storm |  | | C. | arrive with the rain and hail |  | | Student Response D. | **come from the rotating wall cloud outside of the precipitation region** | 100% | | E. | move from the southeast towards the northeast |  | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | When a tornado WATCH is issued for your area, you should \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | evacuate from coastal areas |  | | Student Response B. | stop what you are doing and immediately seek shelter | 0% | | C. | continue your normal activities but keep an eye on the weather |  | | D. | ignore all weather reports because tornadoes are not likely in your area |  | | E. | put away all sharp objects in the room |  | | | | Score: | 0/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | Squall-line thunderstorms generally move to the northeast, the same direction as the individual storms within the line. |  | | Student Response B. | Doppler radar can measure radial velocity inside storms | 0% | | C. | Straight-line winds from thunderstorms can blow down tall trees. |  | | D. | Vertically growing clouds are cumuliform. |  | | E. | In the western North Pacific Ocean, hurricanes are called typhoons. |  | | | | Score: | 0/1 | |

<STORMS>

1.

Warm air rises because of \_\_\_.

Student Response Value

A. inertia

B. continuity

C. buoyancy 100%

D. precipitation drag

E. vorticity

Score: 1/1

2.

Arc clouds are caused by \_\_\_\_.

Student Response Value

A. downbursts

B. updrafts

C. downdrafts

D. gustfronts 100%

E. tornados

Score: 1/1

3.

The clouds at location [i] in this figure is/are called \_\_\_\_\_\_\_\_\_\_ clouds.

Student Response Value

A. anvil

B. wall

C. flanking line

D. funnel

E. mammatus 100%

Score: 1/1

4.

In visible-light weather satellite images, thunderstorms are recognizable by their \_\_\_\_.

Student Response Value

A. well-defined eye

B. wave-like appearance

C. tops casting shadows on the ground

D. lightning causing the whole cloud to glow during the daytime

E. thunder that creates sound waves that propagate to the satellite 0%

Score: 0/1

5.

Which statement is FALSE?

Student Response Value

A. Air molecules tend to spread themselves smoothly and evenly – an effect called continuity.

B. The continuity effect tends to cause closed circulations.

C. The continuity effect couples together vertical and horizontal motions.

D. Boundary-layer air converges horizontally under thunderstorm updrafts due to continuity.

E. Air in the anvil converges horizontally above thunderstorm updrafts due to continuity. 100%

Score: 1/1

CDE?E

1.

A dry air parcel at 2 km altitude with a temperature of 10 °C lifts 2 km further. Its new temperature will be \_\_\_\_\_\_.

Student Response Value

A. -10 °C 100%

B. 5 °C

C. 10 °C

D. -5 °C

E. 0 °C

Score: 1/1

2.

The flat top of a thunderstorm is called a/an \_\_\_\_\_\_.

Student Response Value

A. wall cloud

B. mushroom cloud

C. beavers tail

D. flanking line

E. anvil cloud 100%

Score: 1/1

3.

In North America, thunderstorms and lightning occur most frequently in or near \_\_\_\_\_\_\_\_\_\_.

Student Response Value

A. British Columbia

B. Alberta

C. Oklahoma 0%

D. Ontario

E. Florida

Score: 0/1

4.

The change of water phase from vapour to solid (ice) is called \_\_\_\_\_\_\_\_\_.

Student Response Value

A. sublimation

B. condensation

C. freezing

D. deposition 100%

E. melting

Score: 1/1

5.

Which humidity variable is conserved when an air parcel rises (assuming no rain)?

Student Response Value

A. vapour pressure

B. relative humidity

C. dew point temperature

D. water vapour

E. mixing ratio 100%

Score: 1/1

AE?DE

1.

A relative humidity of 75% means \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. that 75% of the air is water vapour

B. the air could hold 75% water vapour

C. the air is holding 75% of the water it could hold 100%

D. the air is holding 25% of the water it could hold

E. the air is holding 75 kg water vapour/kg air

Score: 1/1

2.

Pressure gradients form because \_\_\_\_.

Student Response Value Correct Answer

A. warm air takes up less space than cold air at the same pressure

B. warm air and cold air lose pressure at the same rate with increasing altitude

C. warm air loses pressure more slowly than cold air with increasing altitude 100%

D. warm air is more dense than cold air

E. cold air does not move as energetically as warm air

Score: 1/1

3.

A safe place to be during a lightning storm is \_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. in a car 100%

B. under a tree

C. on a ridge top

D. on the golf course

E. under an umbrella

Score: 1/1

4.

If the air temperature and dew-point temperature are 15 °C, then the height of the lifting condensation level (LCL) is \_\_\_\_\_\_

Student Response Value Correct Answer

A. 0 km 100%

B. 0.2 km

C. 2 km

D. 11 km

E. 20 km

Score: 1/1

5.

Which statement is TRUE?

Student Response Value Correct Answer

A. Instruments that measure humidity are called hydrometers.

B. The dew-point temperature is the temperature where water vapour forms when you cool air at constant pressure.

C. Saturated air has a relative humidity of 0%.

D. Dust particles in air can serve as cloud condensation nuclei. 100%

E. Thunderstorms always form along cold fronts.

Score: 1/1

6.

If condensation of water vapour in clouds did NOT release any latent heat, then \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. thunderstorms would not occur because there would be no condensation to make cloud droplets 0%

B. thunderstorms would not occur because rising air cools at the adiabatic rate of 9.8 °C/km

C. thunderstorms would occur and be less powerful because rising air would be less buoyant

D. thunderstorms would occur and be more powerful because no latent heat would be lost from the storm

E. there would be no change in thunderstorms

Score: 0/1

7.

The dew point temperature describes \_\_\_\_.

Student Response Value Correct Answer

A. the temperature of dew that is formed by saturated air

B. the temperature at which cooling air will become unsaturated

C. the temperature at which water vapour will condense out of the air 100%

D. the temperature of supersaturated air

E. the temperature cloud condensation nuclei must reach before they can condense

Score: 1/1

8.

Which is FALSE regarding storm longevity?

Student Response Value Correct Answer

A. Hurricanes manipulate their environment to create more boundary-layer fuel.

B. Ocean surface temperatures must be greater than about 26 °C to allow hurricanes to persist.

C. Hurricanes quickly die over land, mostly due to the increased frictional drag at the ground.

D. Supercell storms generally last longer than other thunderstorms due to favourable wind shear. 0%

E. Storm propagation is where a mother storm can trigger a daughter storm with its gust front.

Score: 0/1

9.

To calculate the mixing ratio \_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. divide the mass of water vapour by the mass of all remaining gases. 100%

B. multiply the mass of water vapour by the mass of all remaining gases.

C. divide the actual amount of water vapour in air by the maximum amount that could be held.

D. multiply the actual amount of water vapour in air by the maximum amount that could be held.

E. divide the mass of water vapour by the mass of air.

Score: 1/1

10.

Clouds that form along the leading edge of gust fronts are called \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. altocumulus clouds

B. anvils

C. funnel clouds

D. mammatus clouds

E. arc clouds 100%

Score: 1/1

11.

The exhaust of air from the top of the hurricane occurs because \_\_\_\_\_\_.

Student Response Value Correct Answer

A. the buoyancy force between the core at the top of the hurricane and the surrounding cold air pushes air outward away from the warm core

B. the pressure gradient force between the warm core at the top of the hurricane and the surrounding cold air pushes air outward from the core 100%

C. warm air always rises

D. as air gets closer to the eye, strong winds push the warm column of air up through the core

E. warm air is more dense than cold air

Score: 1/1

12.

The ring of thunderstorms around the eye of a hurricane is called the \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. spiral ring

B. storm surge

C. eye ring

D. eye band

E. eye wall 100%

Score: 1/1

13.

Which of the following does NOT help to strengthen hurricanes?

Student Response Value Correct Answer

A. warm ocean water > 26 °C

B. a large pressure gradient between the eye and the outer part of the storm

C. ocean spray from waves increasing the humidity near the centre of the storm

D. mixing of colder deep ocean water with surface water by strong waves 100%

E. condensation of water within the eye wall

Score: 1/1

14.

When a tornado warning is issued in your town, the safest plan of action is \_\_\_\_\_\_.

Student Response Value Correct Answer

A. to continue normal activities and monitor emergency announcements on news or weather radio 0%

B. if in a car, park underneath a bridge or overpass

C. if in a car, drive away from the tornado perpendicular to the direction it is moving

D. if indoors, find shelter at the highest level of a house such as an attic

E. if outdoors, take shelter under a tree

Score: 0/1

15.

Which statement is FALSE?

Student Response Value Correct Answer

A. Newton’s law says that a net force causes objects to accelerate.

B. Buoyancy force causes warm air to rise, and is important in thunderstorms.

C. Pressure-gradient force causes air to accelerate horizontally, thus creates winds. 0%

D. Acceleration is the change of velocity with time.

E. Pressure gradient is the perpendicular force per unit area.

Score: 0/1

16.

Which factor does NOT contribute to why hurricanes are long lived?

Student Response Value Correct Answer

A. the core is warm

B. there is divergence of air aloft

C. hurricanes create waves and spray

D. deep ocean water is cold 100%

E. there is convergence of air in the boundary layer

Score: 1/1

17.

Thunderstorm cells have all updraft (no downdrafts, no rain) in the \_\_\_ stage of their life cycle.

Student Response Value Correct Answer

A. cirrus

B. mature

C. stratus

D. dissipating

E. cumulus 100%

Score: 1/1

18.

Which statement is FALSE?

Student Response Value Correct Answer

A. Rotating thunderstorms are called mesocyclones.

B. Violent thunderstorms are called supercell storms.

C. The flat bottom of a thunderstorm is the anvil. 100%

D. Most thunderstorms are multicell thunderstorms.

E. Thunderstorm cells go through a cycle of evolution.

Score: 1/1

19.

If twice as much liquid water evaporates, then \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. 4 times as much sensible heat is hidden as latent heat

B. 2 times as much sensible heat is hidden as latent heat 100%

C. there is no change to latent heat

D. 2 times as much sensible heat is released from latent heat

E. 4 times as much sensible heat is released from latent heat

Score: 1/1

20.

Hurricanes can last up to 2 weeks because \_\_\_\_\_\_.

Student Response Value Correct Answer

A. of strong Coriolis effect and warm sea surface temperatures

B. water has a very high capacity to absorb heat

C. high wind shear and the cold ocean produce boundary layer air that is cold and moist

D. large amounts of sensible and latent heat become available when wind-generated ocean waves enhance evaporation 100%

E. hurricanes always travel from the Southwest to the Northeast

Score: 1/1

CCAAD CCCAE BEDCE DECBD

STORMS

1.

Which is FALSE?

Student Response Value Correct Answer

A. The anvil is a structure usually found at the top of thunderstorms.

B. The most favourable time for thunderstorms is about noon. 100%

C. Thunderstorms ultimately get their energy from the sun.

D. Advection is the process that can move thunderstorm fuel from its creation location.

E. Vertical and horizontal motions are coupled by the continuity effect.

Score: 1/1

2.

If you increase the temperature of an air parcel \_\_\_\_.

Student Response Value Correct Answer

A. it will be able to hold less water vapour

B. it will become less buoyant

C. it will become more buoyant 100%

D. it will increase the amount of water in the parcel

E. it will advect downward

Score: 1/1

3.

The horizontal movement of sensible and latent heat by the wind is called \_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. advection 100%

B. convection

C. an adiabat

D. radiation

E. transportation

Score: 1/1

4.

One of the differences between positive and negative lightning strikes is \_\_\_\_.

Student Response Value Correct Answer

A. positive strikes are more numerous

B. negative strikes are the primary cause of natural wildfires

C. positive strikes come from the anvil 100%

D. negative strikes are stronger

E. positive strikes are more frequent

Score: 1/1

5.

Which statement is TRUE?

Student Response Value Correct Answer

A. A "tornado watch" means a tornado is happening now and heading in your direction.

B. Most thunderstorms are short-lived because of the limited availability of boundary-layer fuel nearby. 100%

C. More intense tornadoes happen more frequently than weak ones.

D. Tornado damage paths are usually wider than about 2 km.

E. The official name for a thunderstorm cloud is "nimbostratus".

Score: 1/1

6.

Which statement is TRUE?

Student Response Value Correct Answer

A. Surface winds in tropical cyclones, typhoons, and hurricanes spiral clockwise in the North Atlantic Ocean.

B. The eye of a hurricane has high pressure at the bottom of the stratosphere and low pressure at sea level. 100%

C. Around the windy and rainy eye is an eye wall consisting of a ring of relatively calm and clear cumulus clouds.

D. Hurricanes range in diameter from 15 – 30 km, typically an order of magnitude greater than thunderstorms.

E. Hurricanes have been observed in all oceans of the world, at all times of the year.

Score: 1/1

7.

Which part of a supercell thunderstorm is the wall cloud (refer figure below)?

Student Response Value Correct Answer

A. A

B. B

C. C

D. D

E. E 100%

Score: 1/1

8.

The location in North America with the most tornadoes is \_\_\_\_\_\_\_\_\_\_\_

Student Response Value Correct Answer

A. Florida

B. Oklahoma 100%

C. Alberta

D. Ontario

E. Colorado

Score: 1/1

9.

When many tornadoes happen within a day or two in a small region, it is called a \_\_\_.

Student Response Value Correct Answer

A. mesocyclone

B. supercell

C. anvil

D. tornado outbreak 100%

E. tornado cluster

Score: 1/1

10.

The official name for thunderstorm clouds is \_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. cirrocumulus

B. nimbostratus

C. mammatus

D. stratocumulus

E. cumulonimbus 100%

Score: 1/1

11.

Warm air rises because of \_\_\_.

Student Response Value Correct Answer

A. inertia

B. continuity

C. buoyancy 100%

D. precipitation drag

E. vorticity

Score: 1/1

12.

If an unsaturated air parcel rises 1 km, its temperature will \_\_\_\_\_\_.

Student Response Value Correct Answer

A. increase 9.8 °C

B. increase 6.0 °C

C. not change

D. decrease 6.0 °C

E. decrease 9.8 °C 100%

Score: 1/1

13.

Which hazard or feature is NOT associated with individual thunderstorms?

Student Response Value Correct Answer

A. gust fronts

B. spiral band 100%

C. tornadoes

D. derechos

E. flooding

Score: 1/1

14.

\_\_\_\_\_\_\_ links vertical and horizontal winds in circulations.

Student Response Value Correct Answer

A. rising warm moist air

B. air molecules

C. temperature

D. a cycle

E. continuity 100%

Score: 1/1

15.

Which statement is FALSE?

Student Response Value Correct Answer

A. Thunderstorms work like heat engines, sucking in fuel, extracting energy, and causing motions.

B. Thunderstorms need a favorable environment to exist.

C. Once triggered, thunderstorms can persist without access to humid boundary-layer air. 100%

D. Normal thunderstorms have a lifetime of about 15 to 30 minutes.

E. Supercell storms need wind shear in the environment in order to have long lifetimes.

Score: 1/1

16.

Suppose you have an air parcel at height 1 km above ground with temperature 0 °C. If you lower this air parcel to the ground, its new temperature will be \_\_\_\_\_\_ °C.

Student Response Value Correct Answer

A. -20

B. -10

C. 0

D. 10 100%

E. 20

Score: 1/1

17.

A relative humidity of 75% means \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. that 75% of the air is water vapour

B. the air could hold 75% water vapour

C. the air is holding 75% of the water it could hold 100%

D. the air is holding 25% of the water it could hold

E. the air is holding 75 kg water vapour/kg air

Score: 1/1

18.

Tornadoes in North America generally move toward \_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. mobile home parks

B. mountains

C. the northwest

D. the northeast 100%

E. the southeast

Score: 1/1

19.

In a hurricane, heavy precipitation occurs in the \_\_\_\_\_\_\_\_\_\_.

Student Response Value Correct Answer

A. eye wall 100%

B. top of the hurricane

C. eye

D. spiral bands

E. flanking line

Score: 1/1

20.

Which statement is TRUE about thunderstorms?

Student Response Value Correct Answer

A. The cumulus stage consists of updrafts and downdrafts.

B. The mature stage consists of updrafts and precipitation. 100%

C. The cumulus stage usually has an anvil.

D. The dissipating stage consists of only updrafts.

E. The heaviest rain is likely during the dissipating stage.

Score: 1/1

ANSWERS: B, C, A, C, B, B, E, B, D, E, C, E, B, E, C, D, C, D, A, B

Module 5

P. Quiz #1

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | The flat top of a thunderstorm is called a/an \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | wall cloud |  | | B. | beavers tail |  | | Student Response C. | anvil cloud | 100% | | D. | mushroom cloud |  | | E. | flanking line |  | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | The primary cause of lightning-related forest fires are \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student Response A. | positive cloud to ground lightning strikes | 100% | | B. | stepped leaders |  | | C. | negative cloud to ground lightning strikes |  | | D. | streamers |  | | E. | intercloud lightning strikes |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | Air that is warmer than its environment rises due to \_\_\_\_\_\_\_\_\_\_ force. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | pressure |  | | Student Response B. | buoyancy | 100% | | C. | Coriolis |  | | D. | drag |  | | E. | centrifugal |  | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | Student Response A. | Warm air rises due to buoyancy, cools due to expansion, and then holds less water at saturation. | 100% | | B. | Warm air rises due to buoyancy, warms due to expansion, and then holds more water at saturation. |  | | C. | Warm air sinks due to buoyancy, warms due to compression, and then holds more water at saturation. |  | | D. | Cold air rises due to buoyancy, cools due to compression, and then holds more water at saturation. |  | | E. | Cold air sinks due to buoyancy, warms due to expansion, and then holds more water at saturation. |  | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | If twice as much liquid water evaporates, then \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | 4 times as much sensible heat is hidden as latent heat |  | | B. | 2 times as much sensible heat is hidden as latent heat |  | | C. | there is no change to latent heat |  | | XD. | 2 times as much sensible heat is released from latent heat |  | | X E. | 4 times as much sensible heat is released from latent heat | 0% | | | | Score: | 0/1 | |

P. Quiz #2

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | Natural wildfires are often related to \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | derechos |  | | B. | negative lightning strikes to ground |  | | C. | mammatus clouds |  | | D. | gustnadoes |  | | Student Response E. | positive lightning strikes to ground | 100% | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | Arrange the 6 processes below in their order of occurrence during a thunderstorm: (1) Air CIRCULATES outward between the top of the thunderstorm and converges near the ground. (2) Air SPREADS OUT horizontally at the top of the thunderstorm. (3) Sunlight ABSORBED at ground adds energy to boundary layer air. (4) Air continues to RISE within the cloud, releasing latent heat. (5) At the TOP OF THE STORM, the updraft hits the base of the stratosphere. (6) Rising warm moist air COOLS and reaches saturation at cloud base (LCL). | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | 3…6…5…2…1…4 |  | | Student Response B. | 3…6…4…5…2…1 | 100% | | C. | 3…4…6…5…1…2 |  | | D. | 1…3…4…5…2…6 |  | | E. | 1…3…6…4…5…2 |  | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | The lightning component that starts from the cloud and moves in short bursts toward the ground is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | dart leader |  | | B. | streamer |  | | C. | return stroke |  | | D. | St. Elmo’s fire |  | | Student Response E. | stepped leader | 100% | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | If positive lightning strikes to ground were to cease, then there would likely be \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | no cloud-to-ground lightning |  | | B. | no intercloud lightning |  | | Student Response C. | fewer forest fires | 100% | | D. | less frequent thunderstorms |  | | E. | no lightning at all |  | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | | --- | --- | --- | | A. | Air molecules tend to spread themselves smoothly and evenly – an effect called continuity. |  | | B. | The continuity effect tends to cause closed circulations. |  | | C. | The continuity effect couples together vertical and horizontal motions. |  | | D. | Boundary-layer air converges horizontally under thunderstorm updrafts due to continuity. |  | | Student Response E. | Air in the anvil converges horizontally above thunderstorm updrafts due to continuity. | 100% | | | | Score: | 1/1 | |  | | |

Quiz

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | Hurricanes can last a long time (a week or so) because \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | strong winds make high waves that evaporate warm water into the boundary layer | 100% | Student Response | | B. | the Bermuda Low keeps the storms in the tropics for many days as they intensify |  |  | | C. | Coriolis force is strongest at the equator, where hurricanes usually form |  |  | | D. | thunderstorms in the eye release large amounts of latent heat, which warm the core |  |  | | E. | hurricanes that form in early spring are in an environment with weak wind shear |  |  | | | |  |  | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | Thunderstorms are most frequent near \_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | sunrise |  |  | | B. | noon |  |  | | C. | mid afternoon |  |  | | Student Response D. | sunset | 100% | Student Response | | E. | midnight |  |  | | | |  |  | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | The process by which warm humid air moves horizontally toward thunderstorms is called \_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | convection |  |  | | B. | reflection |  |  | | C. | transportation |  |  | | Student Response D. | advection | 100% | Student Response | | E. | retention |  |  | | | |  |  | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | If twice as much water vapour condenses, then \_\_\_\_\_\_\_\_\_\_ times as much latent heat is released. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | 4 |  |  | | Student Response B. | 2 | 100% | Student Response | | C. | 1 |  |  | | D. | 0.5 |  |  | | E. | 0.25 |  |  | | | |  |  | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | Which hazard or feature is NOT associated with individual thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | derechos |  |  | | Student Response B. | spiral band | 100% | Student Response | | C. | gust fronts |  |  | | D. | flooding |  |  | | E. | tornadoes |  |  | | | |  |  | |  | | |
| **6.** |  |
|  | |  |  | | --- | --- | | *In North America*, most hurricane deaths are caused by \_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | the storm surge | 0% |  | | B. | imbedded tornadoes |  |  | | C. | strong winds |  |  | | Student ResponseD. | heavy rains and flooding |  | Student Response | | E. | power outages |  |  | | | |  |  | |  | | |
| **7.** |  |
|  | |  |  | | --- | --- | | Why is the concept of saturation so important? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | It determines the deep blue colour of the sky. |  |  | | B. | It describes how temperature changes in the horizontal. |  |  | | Student Response C. | It determines when condensation occurs. | 100% | Student Response | | D. | It describes the maximum rotational speed of tornadoes. |  |  | | E. | It increases with increasing wind speed. |  |  | | | |  |  | |  | | |
| **8.** |  |
|  | |  |  | | --- | --- | | If the air temperature and dew-point temperature are 15 °C, then the height of the lifting condensation level (LCL) is \_\_\_\_\_\_ | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | 0 km | 100% | Student Response | | B. | 0.2 km |  |  | | C. | 2 km |  |  | | D. | 11 km |  |  | | E. | 20 km |  |  | | | |  |  | |  | | |
| **9.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Tornado outbreaks are relatively rare (return period of about ten years). |  |  | | B. | Tornadoes in North America are most frequent in winter. |  |  | | Student Response C. | The greatest number of tornado fatalities are for people in mobile homes. | 100% | Student Response | | D. | Thunderstorms and associated tornado tracks generally move from the northeast. |  |  | | E. | Tornadoes are most frequent in regions that are hot and dry. |  |  | | | |  |  | |  | | |
| **10.** |  |
|  | |  |  | | --- | --- | | The ring of thunderstorms around the eye of a hurricane is called the \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | spiral ring |  |  | | B. | storm surge |  |  | | C. | eye ring |  |  | | D. | eye band |  |  | | Student Response E. | eye wall | 100% | Student Response | | | |  |  | |  | | |
| **11.** |  |
|  | |  |  | | --- | --- | | When there is no heat transfer, the process is called \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | isothermal |  |  | | B. | isobaric |  |  | | C. | isotropic |  |  | | D. | baroclinic |  |  | | Student Response E. | adiabatic | 100% | Student Response | | | |  |  | |  | | |
| **12.** |  |
|  | |  |  | | --- | --- | | The flat top of a thunderstorm is called a/an \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | wall cloud |  |  | | Student Response B. | anvil cloud | 100% | Student Response | | C. | mushroom cloud |  |  | | D. | beavers tail |  |  | | E. | flanking line |  |  | | | |  |  | |  | | |
| **13.** |  |
|  | |  |  | | --- | --- | | In Canada, hail is most frequent in \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Ontario |  |  | | B. | Manitoba |  |  | | C. | Saskatchewan |  |  | | Student Response D. | Alberta | 100% | Student Response | | E. | BC |  |  | | | |  |  | |  | | |
| **14.** |  |
|  | |  |  | | --- | --- | | In colder air, pressure \_\_\_\_\_\_ in warmer air. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | decreases more rapidly with height than | 100% | Student Response | | B. | increases more rapidly with height than |  |  | | C. | changes with height at about the same rate as |  |  | | D. | increases more gradually with height than |  |  | | E. | decreases more gradually with height than |  |  | | | |  |  | |  | | |
| **15.** |  |
|  | |  |  | | --- | --- | | The fuel for thunderstorms accumulates in a layer of air called the \_\_\_\_\_\_ layer. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | alpha |  |  | | B. | storage |  |  | | C. | turbo |  |  | | Student Response D. | boundary | 100% | Student Response | | E. | latent |  |  | | | |  |  | |  | | |
| **16.** |  |
|  | |  |  | | --- | --- | | When water evaporates, it \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | takes heat from the surrounding air | 100% | Student Response | | B. | releases heat to the surrounding air |  |  | | C. | decreases the mixing ratio (r) |  |  | | D. | increases the static potential of an air parcel A |  |  | | E. | increases the saturation mixing ratio rs |  |  | | | |  |  | |  | | |
| **17.** |  |
|  | |  |  | | --- | --- | | Which of the following is NOT a type of supercell? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | classic |  |  | | B. | low precipitation |  |  | | C. | high precipitation |  |  | | Student Response D. | multicell | 100% | Student Response | | | |  |  | |  | | |
| **18.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | Cold air can hold more water vapor at saturation than warm air. | 100% | Student Response | | B. | The saturated adiabatic lapse rate is less than the dry adiabatic lapse rate. |  |  | | C. | Condensation releases latent heat and warms the air. |  |  | | D. | Water vapor mixing ratio is conserved in rising air parcels. |  |  | | E. | Rainfall can be used to estimate the net heating in a storm. |  |  | | | |  |  | |  | | |
| **19.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | In North America, the most frequent location for hail is Quebec. | 100% | Student Response | | B. | Before the main lightning stroke, a stepped-leader usually works its way down from the cloud. |  |  | | C. | Supercells often occur with low-altitude inflow air from the southeast and high-altitude winds from the west. |  |  | | D. | The highest category of tornado damage that has been reported is F5. |  |  | | E. | Tornado outbreaks are when many tornadoes occur in a day or two in one region. |  |  | | | |  |  | |  | | |
| **20.** |  |
|  | |  |  | | --- | --- | | The normal sequence of intensification before becoming a hurricane is \_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tropical depression, tropical disturbance, tropical storm |  |  | | B. | tropical depression, tropical storm, tropical disturbance |  |  | | C. | tropical storm, tropical disturbance, tropical depression |  |  | | D. | tropical disturbance, tropical storm, tropical depression |  |  | | Student Response E. | tropical disturbance, tropical depression, tropical storm | 100% | Student Response | | | |  |  | |  | | |
| 1. |  |
|  | |  |  | | --- | --- | | Energy in the form of hot humid air reaches storms through \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | transpiration |  |  | | B. | conduction |  |  | | Student Response C. | advection | 100% | Student Response | | D. | downdrafts |  |  | | E. | condensation |  |  | | | | Score: | 1/1 | |  | | |
| 2. |  |
|  | |  |  | | --- | --- | | The longest lived storm is a \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornado |  |  | | B. | supercell thunderstorm |  |  | | Student Response C. | multicell thunderstorm | 0% |  | | D. | hurricane |  | Student Response | | E. | hailstorm |  |  | | | | Score: | 0/1 | |  | | |
| 3. |  |
|  | |  |  | | --- | --- | | The most likely time of day for thunderstorm formation is late afternoon and early evening because \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | the warmest time of the day is at noon |  |  | | B. | solid Earth surfaces cool faster than oceanic surfaces |  |  | | Student Response C. | it is when the maximum amount of heat has accumulated | 100% | Student Response | | D. | trigger mechanisms are more frequent at this time |  |  | | E. | the Earth surfaces cool in the evening. |  |  | | | | Score: | 1/1 | |  | | |
| 4. |  |
|  | |  |  | | --- | --- | | Tornado translation speeds are \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | between 0 and 100 km/h | 100% | Student Response | | B. | between 100 and 200 km/h |  |  | | C. | between 200 and 300 km/h |  |  | | D. | between 300 and 400 km/h |  |  | | E. | between 400 and 500 km/h |  |  | | | | Score: | 1/1 | |  | | |
| 5. |  |
|  | |  |  | | --- | --- | | Which of the following is NOT a hazard of thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | lightning |  |  | | B. | downbursts |  |  | | C. | gustfronts |  |  | | Student Response D. | storm surge | 100% | Student Response | | E. | hail |  |  | | | | Score: | 1/1 | |  | | |
| 6. |  |
|  | |  |  | | --- | --- | | The flat top of a thunderstorm is called a/an \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | wall cloud |  |  | | B. | flanking line |  |  | | C. | beavers tail |  |  | | Student Response D. | anvil cloud | 100% | Student Response | | E. | mushroom cloud |  |  | | | | Score: | 1/1 | |  | | |
| 7. |  |
|  | |  |  | | --- | --- | | Given the saturation vapour pressure curve below, an air parcel at 20 °C and vapour pressure 6 kPa is \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student Response A. | supersaturated | 100% | Student Response | | B. | saturated |  |  | | C. | unsaturated |  |  | | D. | dry |  |  | | E. | insufficient information to determine |  |  | | | | Score: | 1/1 | |  | | |
| 8. |  |
|  | |  |  | | --- | --- | | Mammatus clouds \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | are an indicator of tornadic thunderstorms |  |  | | B. | form on top of the anvil |  |  | | C. | form on the wall cloud |  |  | | Student Response D. | form on the bottom of the anvil | 100% | Student Response | | E. | are an indicator of hail storms |  |  | | | | Score: | 1/1 | |  | | |
| 9. |  |
|  | |  |  | | --- | --- | | A measure of the total amount of latent heat released in a thunderstorm is \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | storm depth |  |  | | B. | storm diameter |  |  | | Student Response C. | rainfall rate | 100% | Student Response | | D. | tornado wind speed |  |  | | E. | amount of lightning |  |  | | | | Score: | 1/1 | |  | | |
| 10. |  |
|  | |  |  | | --- | --- | | At equilibrium, air that holds all the water vapour that it can is called \_\_\_\_\_\_ | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | warm |  |  | | B. | cold |  |  | | C. | sinking |  |  | | D. | aspirated |  |  | | Student Response E. | saturated | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| 11. |  |
|  | |  |  | | --- | --- | | The exhaust of air from the top of the hurricane occurs because \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | as air gets closer to the eye, strong winds push the warm column of air up through the core |  |  | | B. | the buoyancy force between the core at the top of the hurricane and the surrounding cold air pushes air outward away from the warm core |  |  | | C. | warm air is more dense than cold air |  |  | | Student Response D. | the pressure gradient force between the warm core at the top of the hurricane and the surrounding cold air pushes air outward from the core | 100% | Student Response | | E. | warm air always rises |  |  | | | | Score: | 1/1 | |  | | |
| 12. |  |
|  | |  |  | | --- | --- | | Dust storms are called \_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornadoes |  |  | | B. | derechos |  |  | | C. | gust fronts |  |  | | Student Response D. | haboobs | 100% | Student Response | | E. | downbursts |  |  | | | | Score: | 1/1 | |  | | |
| 13. |  |
|  | |  |  | | --- | --- | | In visible-light weather satellite images, thunderstorms are recognizable by their \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | well-defined eye |  |  | | B. | wave-like appearance |  |  | | Student Response C. | tops casting shadows on the ground | 100% | Student Response | | D. | lightning causing the whole cloud to glow during the daytime |  |  | | E. | thunder that creates sound waves that propagate to the satellite |  |  | | | | Score: | 1/1 | |  | | |
| 14. |  |
|  | |  |  | | --- | --- | | In North America most thunderstorms form \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | on the Canadian prairies |  |  | | Student Response B. | in the southeast US | 100% | Student Response | | C. | near the east coast |  |  | | D. | on the west coast |  |  | | E. | in Oklahoma |  |  | | | | Score: | 1/1 | |  | | |
| 15. |  |
|  | |  |  | | --- | --- | | Thunderstorm tops often reach an altitude of roughly \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | 10 m |  |  | | B. | 100 m |  |  | | C. | 1000 m |  |  | | Student Response D. | 10 km | 100% | Student Response | | E. | 100 km |  |  | | | | Score: | 1/1 | |  | | |
| 16. |  |
|  | |  |  | | --- | --- | | Which disaster scale is used to classify the intensity of tornadoes in North America? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | linear |  |  | | B. | Richter |  |  | | Student Response C. | Saffir-Simpson | 0% |  | | D. | Torro |  |  | | E. | Fujita |  | Student Response | | | | Score: | 0/1 | |  | | |
| 17. |  |
|  | |  |  | | --- | --- | | Storms get most of their energy from \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | sensible heat |  |  | | Student Response B. | latent heat | 100% | Student Response | | C. | radioactive decay |  |  | | D. | Coriolis force |  |  | | E. | wind shear |  |  | | | | Score: | 1/1 | |  | | |
| 18. |  |
|  | |  |  | | --- | --- | | When water condenses in an air parcel, it \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | increases the static potential of an air parcel |  |  | | B. | takes heat from the surrounding air |  |  | | C. | increases the mixing ratio (r) |  |  | | D. | decreases the saturation mixing ratio rs |  |  | | Student Response E. | releases heat to the surrounding air | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| 19. |  |
|  | |  |  | | --- | --- | | Which statement is TRUE about thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | The cumulus stage consists of updrafts and downdrafts. |  |  | | Student Response B. | The mature stage consists of updrafts and precipitation. | 100% | Student Response | | C. | The cumulus stage usually has an anvil. |  |  | | D. | The dissipating stage consists of only updrafts. |  |  | | E. | The heaviest rain is likely during the dissipating stage. |  |  | | | | Score: | 1/1 | |  | | |
| 20. |  |
|  | |  |  | | --- | --- | | Name the grey-shaded cloud shown in this sketch. Hint: it is sometimes seen before tornadoes form. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | flanking line |  |  | | B. | funnel |  |  | | C. | anvil |  |  | | Student Response D. | wall | 100% | Student Response | | E. | haboob |  |  | | | | Score: | 1/1 | |  | | |

**Chapter 5: Storms**

|  |  |
| --- | --- |
| **1.** |  |
|  | |  |  | | --- | --- | | Which factor does NOT contribute to why hurricanes are long lived? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | the core is warm |  |  | | B. | there is divergence of air aloft |  |  | | C. | hurricanes create waves and spray |  |  | | Student ResponseD. | deep ocean water is cold | 100% | Student Response | | E. | there is convergence of air in the boundary layer |  |  | | | | Score: | 1/1 | |  | | |
| **2.** |  |
|  | |  |  | | --- | --- | | Thunderstorm cells have all updraft (no downdrafts, no rain) in the \_\_\_ stage of their life cycle. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | cirrus |  |  | | B. | mature |  |  | | C. | stratus |  |  | | D. | dissipating |  |  | | Student ResponseE. | cumulus | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **3.** |  |
|  | |  |  | | --- | --- | | Which of the following does NOT help to strengthen hurricanes? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | warm ocean water > 26 °C |  |  | | B. | a large pressure gradient between the eye and the outer part of the storm |  |  | | C. | ocean spray from waves increasing the humidity near the centre of the storm |  |  | | Student ResponseD. | mixing of colder deep ocean water with surface water by strong waves | 100% | Student Response | | E. | condensation of water within the eye wall |  |  | | | | Score: | 1/1 | |  | | |
| **4.** |  |
|  | |  |  | | --- | --- | | The location in North America that has the most frequency of hail AND of tornadoes is \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | Florida |  |  | | B. | Alberta |  |  | | Student ResponseC. | Oklahoma | 100% | Student Response | | D. | Ontario |  |  | | E. | California |  |  | | | | Score: | 1/1 | |  | | |
| **5.** |  |
|  | |  |  | | --- | --- | | The longest lived storm is a \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornado |  |  | | B. | supercell thunderstorm |  |  | | Student ResponseC. | multicell thunderstorm | 0% |  | | D. | hurricane |  | Student Response | | E. | hailstorm |  |  | | | | Score: | 0/1 | |  | | |
| **6.** |  |
|  | |  |  | | --- | --- | | When a tornado warning is issued in your town, the safest plan of action is \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | if in a car, drive away from the tornado perpendicular to the direction it is moving |  | Student Response | | B. | if in a car, park underneath a bridge or overpass |  |  | | Student ResponseC. | to continue normal activities and monitor emergency announcements on news or weather radio | 0% |  | | D. | if indoors, find shelter at the highest level of a house such as an attic |  |  | | E. | if outdoors, take shelter under a tree |  |  | | | | Score: | 0/1 | |  | | |
| **7.** |  |
|  | |  |  | | --- | --- | | The primary source of energy for the Earth’s weather is \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | the Sun | 100% | Student Response | | B. | wind |  |  | | C. | the tides |  |  | | D. | radioactive decay |  |  | | E. | gravity |  |  | | | | Score: | 1/1 | |  | | |
| **8.** |  |
|  | |  |  | | --- | --- | | Which phenomenon is generally NOT related to thunderstorms? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | anvil |  |  | | Student ResponseB. | eye wall | 100% | Student Response | | C. | hail |  |  | | D. | lightning |  |  | | E. | haboob |  |  | | | | Score: | 1/1 | |  | | |
| **9.** |  |
|  | |  |  | | --- | --- | | If an unsaturated air parcel rises 1 km, its temperature will \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | increase 9.8 °C |  |  | | B. | increase 6.0 °C |  |  | | C. | not change |  |  | | D. | decrease 6.0 °C |  |  | | Student ResponseE. | decrease 9.8 °C | 100% | Student Response | | | | Score: | 1/1 | |  | | |
| **10.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | Death or injury from lightning are highly preventable simply by avoiding certain locations during thunderstorms. | 100% | Student Response | | B. | In North America, lightning is found most frequently where it is driest. |  |  | | C. | Stepped leaders reach up from the ground towards the sky. |  |  | | D. | In North America most lighting deaths happen in January, when thunderstorms are most prevalent. |  |  | | E. | Lightning strikes only in areas where thunderstorms are directly overhead. |  |  | | | | Score: | 1/1 | |  | | |
| **11.** |  |
|  | |  |  | | --- | --- | | The stage of a thunderstorm cell that has both updraft and downdraft is called the \_\_\_\_\_\_\_ stage. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | embryo |  |  | | B. | nucleus |  |  | | C. | cumulus |  |  | | Student ResponseD. | mature | 100% | Student Response | | E. | dissipating |  |  | | | | Score: | 1/1 | |  | | |
| **12.** |  |
|  | |  |  | | --- | --- | | When water condenses in an air parcel, it \_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | increases the mixing ratio (r) |  |  | | B. | decreases the saturation mixing ratio rs |  |  | | C. | takes heat from the surrounding air |  |  | | Student ResponseD. | releases heat to the surrounding air | 100% | Student Response | | E. | increases the static potential of an air parcel |  |  | | | | Score: | 1/1 | |  | | |
| **13.** |  |
|  | |  |  | | --- | --- | | Which statement is TRUE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | During a lightning storm, it is safe to use a cell phone or a cordless phone. | 100% | Student Response | | B. | In a lightning storm, it is dangerous to be inside a metal car. |  |  | | C. | A dangerous place to be in a lightning storm is inside a metal airplane. |  |  | | D. | Lightning is colder than the surface temperature of the sun. |  |  | | E. | Lightning can come only from the base of the thunderstorm. |  |  | | | | Score: | 1/1 | |  | | |
| **14.** |  |
|  | |  |  | | --- | --- | | If you increase the temperature of an air parcel \_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | it will be able to hold less water vapour |  |  | | B. | it will become less buoyant |  |  | | Student ResponseC. | it will become more buoyant | 100% | Student Response | | D. | it will increase the amount of water in the parcel |  |  | | E. | it will advect downward |  |  | | | | Score: | 1/1 | |  | | |
| **15.** |  |
|  | |  |  | | --- | --- | | Which conditions below would be ideal for the development of a supercell thunderstorm? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | a hot dry day with little wind |  |  | | B. | a hot dry day with strong winds |  |  | | Student ResponseC. | a hot humid day with strong winds | 100% | Student Response | | D. | a hot humid day with little wind |  |  | | E. | a cool humid day with little wind |  |  | | | | Score: | 1/1 | |  | | |
| **16.** |  |
|  | |  |  | | --- | --- | | Which statement is FALSE? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | Hurricanes can cross the equator. | 100% | Student Response | | B. | Hurricanes have high pressure above the eye near the storm top. |  |  | | C. | Hurricanes have warm cores. |  |  | | D. | Hurricanes rarely form in the south Atlantic. |  |  | | E. | Hurricane winds near the surface rotate counterclockwise in the Northern Hemisphere. |  |  | | | | Score: | 1/1 | |  | | |
| **17.** |  |
|  | |  |  | | --- | --- | | Most tornadoes at the ground are about as wide as a \_\_\_\_\_\_\_\_\_\_. | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tree trunk |  |  | | B. | car |  |  | | Student ResponseC. | house | 100% | Student Response | | D. | small town |  |  | | E. | large city |  |  | | | | Score: | 1/1 | |  | | |
| **18.** |  |
|  | |  |  | | --- | --- | | Most thunderstorms generally move toward what direction in North America? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | Student ResponseA. | northeast | 100% | Student Response | | B. | southeast |  |  | | C. | southwest |  |  | | D. | northwest |  |  | | E. | they don’t move |  |  | | | | Score: | 1/1 | |  | | |
| **19.** |  |
|  | |  |  | | --- | --- | | What characteristic in the thunderstorm environment allows storms to become long lasting and severe? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | warm humid air near the ground |  |  | | B. | a capping inversion |  |  | | C. | subsidence outside of the storm |  |  | | Student ResponseD. | wind shear | 100% | Student Response | | E. | a trigger mechanism |  |  | | | | Score: | 1/1 | |  | | |
| **20.** |  |
|  | |  |  | | --- | --- | | Which storm hazards do NOT apply to hurricanes? | | |  | | | |  | **Student Response** | **Value** | **Correct Answer** | | --- | --- | --- | --- | | A. | tornadoes |  |  | | B. | high waves |  |  | | C. | downpours |  |  | | D. | storm surge |  |  | | Student ResponseE. | all apply | 100% | Student Response | | | | Score: | 1/1 | |