Exam 3

- Due Apr 8 at 10pm
- Points 100
- Questions 50
- Available Apr 8 at 8am - Apr 8 at 10pm 14 hours
- Time Limit 60 Minutes

Instructions

This exam is based on lectures 9-12 and chapters 6-9

- Time limit: 60 minutes
- The timer continues even if you exit the quiz
- One attempt
- Open book/note

This quiz was locked Apr 8 at 10pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	60 minutes	94 out of 100

Score for this quiz: 94 out of 100
Submitted Apr 8 at 1:40pm
This attempt took 60 minutes.

Question 1
2 / 2 pts
How does hail form?
Correct!

- (●) Strong updraft in a thunderstorm keeps ice particles in the atmosphere, allowing them to grow larger.
- ( ) Rain freezes as it falls to the surface in a thunderstorm.
- ( ) A winter storm can turn snow into hail with extremely cold temperatures.

Question 2
2 / 2 pts

Most of the water vapor fueling thunderstorms in the central portion of the United States is derived from

- ( ) transpiration from vegetation at the surface.

Correct!

- [x] evaporation from the Gulf of Mexico.
- [ ] evaporation from the Pacific Ocean.
- [ ] evaporation of surface waters in continental settings such as lakes and rivers.

Question 3

2 / 2 pts

_____ is the state of the atmosphere on a given day and describes short-term processes such as thunderstorms.

Correct!

Weather

Correct Answers

weather

Question 4

2 / 2 pts

Gust fronts develop due to downdrafts that form in thunderstorms. They result from

- [ ] warm air rushing to the base of a thunderstorm.
- [ ] All of these are possibilities.
- [ ] air with high relative humidity rushing to the base of a thunderstorm.

Correct!

- [x] cool air rushing to the base of a thunderstorm.
- [ ] air with low relative humidity rushing to the base of a thunderstorm.

Question 5

2 / 2 pts

Do tsunamis pose a danger to ships at sea far from shorelines?

- [ ] No, tsunamis tend to attenuate in deep water and pose no danger to ships.
- [ ] Yes, tsunamis with long wavelengths pose a significant danger to ships.

Correct!

- [x] No, tsunamis exhibit small amplitudes in deep water and pose no danger to ships.
- [ ] Yes, tsunamis with high amplitudes pose a significant danger to ships.

Question 6
2 / 2 pts

In comparing tsunamis to wind-driven waves,

- tsunamis result from the flow currents circulating in the oceans; wind-driven waves are produced by large storms.
- wind shear is responsible for wind-driven waves; tsunamis result from tidal waves.

Correct!

- tsunamis result from the sudden movement of mass against the water; wind shear produces wind-driven waves.
- both are a result of wind shear over the surface of water; tsunamis are just larger examples of wind-driven waves.

Question 7
2 / 2 pts

One strategy to reduce agricultural losses from hailstorms is

Correct!

- to install hail nets over fields to reduce crop losses.
- to use long-term weather forecasts to make decisions about the type of crop to plant.
- all of these
- to concentrate crop fields so there is less probability of a storm impacting a particular area.
- none of these

Question 8
2 / 2 pts

In which region of the Earth would you expect to see the greatest influence from the Coriolis effect on wind?

- at latitudes 20–30 degrees north and south of the equator

Correct!

- at the geographic poles
- at latitudes between 30–60 degrees north and south of the equator
- at the equator

Question 9
2 / 2 pts

In the figure below, the total volume of open space between sedimentary particles are referred to as

- permeability.

Correct!

- porosity.
- infill.
- void space.

Question 10

0 / 2 pts

What percentage of the world's tornadoes occur in the central U.S.? (enter a number only)

You Answered

75

Between 70 and 70

Question 11

2 / 2 pts

The most abundant gas found in the Earth’s atmosphere is

- argon.

Correct!

- nitrogen.
- oxygen.

carbon dioxide.

Question 12

0 / 2 pts

What is an atmospheric front?

the location where an air mass first develops its defining characteristics

Correct Answer

the boundary between different air masses

the location in an air mass where the isobars start to become more widely spaced

You Answered

the direction an air mass is moving in response to the pressure gradient force, friction, and the Coriolis effect

Question 13

2 / 2 pts

Which of the following correctly describes the Coriolis effect?

It is a weak force generated by the balance between the gravitational force and the pressure gradient force at different altitudes.

Correct!

It is an apparent force resulting from Earth's rotation that deflects objects from what would otherwise be their path.

It is a force that changes the path of objects if they are observed.

It is an opposing force that is generated by an interaction of the force of friction and the pressure gradient force.

Question 14

2 / 2 pts

Supercell thunderstorms are different than single-cell thunderstorms. Supercell thunderstorms require _____ to form and single-cell storms don't.

Correct!

wind shear

uplifting air

low pressure

moist air

Question 15

2 / 2 pts

What percentage of lightning strike victims are killed?

Correct!

- [x] 10%
- [ ] 45%
- [ ] 25%
- [ ] 100%
- [ ] 70%

Question 16
2 / 2 pts

During adiabatic expansion,

Correct!

- [x] air parcels expand because they are losing heat to the ambient air.
- [ ] air parcels expand due to high relative humidity.
- [ ] air parcels expand because they are gaining heat from ambient air.
- [ ] air parcels expand because of solar heating.

Question 17
2 / 2 pts

True/False: Heat is the measurement of how fast atoms are moving and describes how hot or cold a substance is.

- [ ] True

Correct!

- [x] False

Question 18
2 / 2 pts

In the U.S., where does most of the warm, moist air needed for thunderstorms come from?

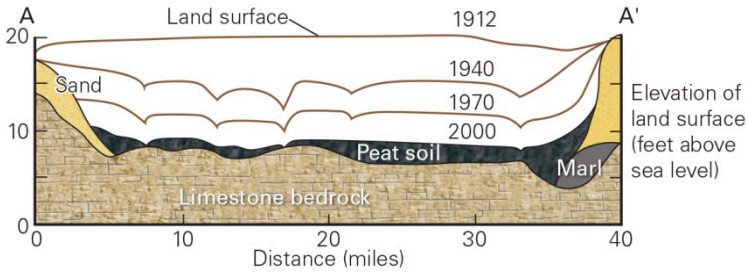
- [ ] Atlantic Ocean
- [ ] Canada
- [ ] Pacific Ocean

Correct!

- [x] Gulf of Mexico

Question 19
2 / 2 pts

The figure below illustrates the degree of land subsidence that has occurred in the southern part of the state of Florida over the last century. What is a primary cause of subsidence in this region?



- tectonic processes

Correct!

- diversion of surface waters from their natural flow paths to the sea
- none of these
- all of these
- pumping oil and gas resources from beneath the region

Question 20
2 / 2 pts

The Good Friday megathrust earthquake of 9.2 M_w occurred off the coast of southern Alaska in 1964. The resulting tsunamis resulted from

Correct!

- both subsidence and uplift of the seafloor crust over an area comparable in size of the state of California.
- subsidence only of the seafloor crust over an area comparable in size of the state of California.
- uplift only of the seafloor crust over an area comparable in size of the state of California.
- None of these; a tsunami did not form as a result of the earthquake.

Question 21
2 / 2 pts

What type of landscape is shown in this photograph?

- Orogenic terrain

Correct!

- Karst terrain
- Volcanic landscape
- Scablands

Question 22

2 / 2 pts

In the northern hemisphere low pressure systems will always rotate _____.

Correct!

- counterclockwise
- clockwise

Question 23

2 / 2 pts

Orographic lifting occurs in which environment(s) on Earth?

- none of these
- over vast portions of the continents at low elevations near sea level

- All of these are possibilities.

Correct!

- over mountainous regions of the Earth with high elevations
- over the oceans of the Earth

Question 24
2 / 2 pts

A measure of human comfort that depends on temperature and relative humidity is called the

- heat scale.
- comfort index.

Correct!

- heat index.
- relative comfort scale.

Question 25
2 / 2 pts

Clouds in the Earth’s atmosphere occur in which layer of the atmosphere?

- mesosphere

Correct!

- troposphere
- stratosphere
- thermosphere

Question 26
2 / 2 pts

With few exceptions, tsunamis produced by earthquakes most often involve which types of faults?

- strike slip and reverse slip faults

Correct!

- normal and reverse slip faults
- strike slip and oblique slip faults

- strike slip and normal slip faults

Question 27
2 / 2 pts

Globally, there has been significant development in river delta regions, floodplains, and coastal plains. What is the main reason these regions are so attractive for humans to settle?

- Water resources are abundant.

Correct!

- The land is commonly fertile for agriculture.
- The land is typically inexpensive to acquire.

Question 28
2 / 2 pts

Once a tsunami reaches its inundation limit, has the danger passed?

Correct!

No, drawback returns water to the sea carrying much of the debris that was carried along in the advancing wave, and weakened structures are now subjected to dynamic forces in the opposite direction.

- Yes, the inundation limit marks the farthest reach of the tsunami, so the danger of further damage is over.
- Yes, at the inundation limit, water flow slows to a stop and will slowly drain back to the sea.
- Yes, structures that survived and withstood the initial tsunami wave are now safe.

Question 29
2 / 2 pts

Is the density of air affected by temperature?

Correct!

- Yes, hotter air expands and is therefore less dense.
- Yes, colder air expands and is therefore less dense.
- Yes, hotter air contracts and is therefore less dense.
- Yes, colder air contracts and is therefore less dense.

Question 30
2 / 2 pts

The figure below shows submarine slump deposits around deposits extending as far as 200 km from the Hawaiian Islands. What single factor is most important in generating tsunamis from submarine mass-wasting processes?

- the surface area of the slump block
- the volume of the slump block

Correct!

- the velocity of motion of the slump block
- the thickness of the slump block
- the density of the slump block

Question 31
2 / 2 pts

What effect does evaporating water have on the temperature of air surrounding it?

Correct!

- It has a cooling effect
- It has a warming effect
- It has no effect

Question 32
2 / 2 pts

Predicting the hazard potential for damage from tsunamis is in part related to the run-up elevation potential onto adjacent coastlines. Run-up potential is related to

- high-tide sea level.

Correct!

- elevation of the tsunami.
- low-tide sea level.
- atmospheric pressure.
- average sea level.

Question 33
2 / 2 pts

Tsunamis are most often generated by

- storms.
- tides.
- currents.

Correct!

- earthquakes.

Question 34
2 / 2 pts

In which of the following locations are severe thunderstorms commonly found?

- at high latitudes where the average surface albedo is high
- on the leeward side of mountains, where air is rapidly descending

Correct!

- at the collision of weather-system fronts
- in the center of high-pressure systems

Question 35
2 / 2 pts

Clouds at ground level are referred to as

Correct!

- [x] fog.
- [ ] cumulus clouds.
- [ ] stratus clouds.
- [ ] cirrus clouds.

Question 36
2 / 2 pts
When water evaporates it _____.

- [ ] becomes denser
- [ ] starts to form clouds

Correct!

- [x] absorbs heat
- [ ] releases heat

Question 37
2 / 2 pts
High pressure air masses form when _____.

- [ ] relatively warm air rises
- [ ] relatively cooler air rises

Correct!

- [x] relatively cooler air sinks
- [ ] relatively warm air sinks

Question 38
2 / 2 pts

Can fault motion that does not involve vertical displacement of the seafloor be responsible for the generation of a tsunami?

- [ ] No, tsunamis result from differential vertical displacement of crustal blocks along either side of the fault plane.
- [ ] Tsunamis are not related to fault motion.

Correct!

Yes, earthquakes resulting from fault displacement can produce subaerial or submarine landslides that flow into bodies of water and displace the water column.

Yes, seismic energy transmitted into adjacent water bodies can produce tsunamis, even if the fault motion occurs far from a shoreline.

Question 39
2 / 2 pts

The term derecho refers to

thunderstorm-generated winds that rotate around a central axis.

thunderstorm-generated downdraft winds.

thunderstorm-generated updraft winds.

Correct!

thunderstorm-generated straight-line winds.

Question 40
0 / 2 pts

An occlude front forms when

Correct Answer

an advancing cold front overtakes a warm front.

You Answered

two cold fronts combine.

two warm fronts combine.

an advancing warm front overtakes a cold front.

Question 41
2 / 2 pts

Which of the following statements is true with regard to the distribution of lightning? Lightning is _____.

more common over the ocean than it is on land

fairly evenly distributed over the land and oceans

more common at lower longitudes than it is at higher longitudes

Correct!

more common over land than the ocean

Question 42
2 / 2 pts

As formally defined by meteorologists, the difference in a supercell thunderstorm versus an ordinary thunderstorm is that

Correct!

supercell thunderstorms exhibit rotating updrafts, while ordinary thunderstorms do not exhibit rotating updrafts.

supercell thunderstorms only form at low latitudes, while ordinary thunderstorms only form at high latitudes.

supercell thunderstorms only form at high latitudes, while ordinary thunderstorms only form at low latitudes.

supercell thunderstorms do not exhibit rotating updrafts, while ordinary thunderstorms exhibit rotating updrafts.

Question 43
2 / 2 pts

Meteorologists refer to the environmental lapse rate to describe

the rate at which atmospheric pressure is increasing in rising parcels.

the rate at which rising parcels increase in temperature.

the rate at which atmospheric pressure is decreasing in rising parcels.

Correct!

the rate at which rising parcels decrease in temperature.

Question 44
2 / 2 pts

The term that describes the average atmospheric conditions over long time periods, like decades, is _____.

median weather

steady state

weather

Correct!

climate

Question 45
2 / 2 pts

Is there a relationship between the surface of the water table and the topography?

All of these may be true depending the permeability of an aquifer.

Correct!

Yes; water table surfaces tend to follow topography, and are higher beneath hills and lower in areas where valleys are present.

No; the surface of a water table is flat-lying because of the influence of pressure gradients in the subsurface.

No; the surface of a water table is flat-lying because of the influence of gravity.

Question 46

2 / 2 pts

Why does lightning occur in thunderstorms?

Correct!

Tall clouds can separate charged particles, creating an imbalance that is released by lightning.

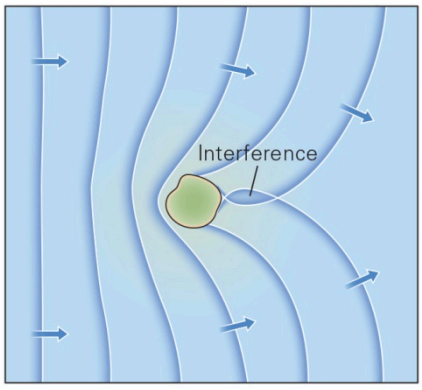
Layers of dry air in thunder clouds prevent the flow of electrons and cause the buildup of electrical imbalances.

Thunderstorms create a vortex in which electrons from the Sun are funneled together before striking the ground.

Question 47

2 / 2 pts

The figure below illustrates that tsunami waves may interact and interfere along the wave front. This interference is a result of



wave doubling.

wave reflection.

Correct!

wave refraction.

wave attenuation.

Question 48
2 / 2 pts

In zones of high atmospheric pressure, winds result from descending air at higher altitudes, promoting

Correct!

clear skies.

extensive cloud development.

unusually warm temperature.

stormy weather.

Question 49
2 / 2 pts

Can meaningful tsunami predictions be made, and what is the basis to do so?

Yes, where earthquakes have been predicted, tsunami warnings are typically given with earthquake warnings in coastal areas.

Correct!

No, as the events responsible for tsunamis are themselves unpredictable, it is not possible to predict the onset of a tsunami.

No, tsunamis occur from so many different causes they may be considered to occur randomly.

Yes, slope monitoring along coastal areas is sufficiently reliable to be able to warn of impending tsunamis.

Question 50
2 / 2 pts

Why does the advancement of the leading edge of a warm air mass on a cold air mass often lead to the development of widespread clouds and light rain?

The cold air in front of the the warm front is warmed, which releases latent heat and causes the evaporation of additional water.

Correct!

The warm air is forced up over a gentle slope of cold air and is cooled while doing so, leading to cloud formation and rain.

The advancing warm air pushes under the cold air mass, and that causes compression and the development of rain and clouds in the compressed air.

Preexisting rain and clouds in the cold air mass are spread out by the addition of kinetic energy from the warm air masses.

Quiz Score: 94 out of 100