Exam 3

- Due Apr 8 at 10pm
- Points 100
- Questions 50
- Available Apr 8 at 8am - Apr 8 at 10pm 14 hours
- Time Limit 120 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	70 minutes	92 out of 100

Score for this quiz: 92 out of 100
Submitted Apr 8 at 11:31am
This attempt took 70 minutes.

Question 1
2 / 2 pts

Latent heat is _____.

Correct!

◉ energy that is absorbed, stored and released as water changes between liquid, solid, and gas

○ energy that Earth's atmosphere receives from the sun

○ longwave radiation that is absorbed by greenhouse gases and reradiated back down toward Earth

○ energy that earth radiates outward toward the atmosphere

Question 2
2 / 2 pts

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

○ clockwise

Correct!

◉ counterclockwise

Question 3
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

○ in the center of high-pressure systems

Correct!

◉ at the collision of weather-system fronts

Question 4
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 5

2 / 2 pts

A mesocyclone is considered by meteorologists to represent

- typhoons that occur in the Pacific Ocean.

Correct!

- small-scale rotating updrafts at the center of a supercell thunderstorm.
- hurricanes that form in the Atlantic Ocean.
- tornadoes.

Question 6

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

Question 7
2 / 2 pts

The term derecho refers to

Correct!

- (●) thunderstorm-generated straight-line winds.
- ( ) thunderstorm-generated winds that rotate around a central axis.
- ( ) thunderstorm-generated downdraft winds.
- ( ) thunderstorm-generated updraft winds.

Question 8
2 / 2 pts

What is the difference between near-field tsunamis and far-field tsunamis?

- ( ) The terms near-field and far-field describe the extent of wave run-up onto the shore during a tsunami.
- ( ) The terms near-field and far-field describe the water depth at the origin of a tsunami.
- ( ) The terms near-field and far-field describe the extent of the area affected by tsunamis.

Correct!

- (●) The terms near-field and far-field describe the surface distance to the tsunami origin.

Question 9
2 / 2 pts

One strategy to reduce agricultural losses from hailstorms is

- ( ) to use long-term weather forecasts to make decisions about the type of crop to plant.

- none of these
- all of these
- to concentrate crop fields so there is less probability of a storm impacting a particular area.

Correct!

- to install hail nets over fields to reduce crop losses.

Question 10

2 / 2 pts

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

- extensive cloud development.
- unusually warm temperature.

Correct!

- clear skies.
- stormy weather.

Question 11

2 / 2 pts

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

Correct!

- climate
- steady state
- median weather

weather

Question 12

2 / 2 pts

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

Pacific Ocean

Canada

Correct!

Gulf of Mexico

Atlantic Ocean

Question 13

2 / 2 pts

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

Correct!

- (●) porosity.
- ( ) void space.
- ( ) permeability.
- ( ) infill.

Question 14

2 / 2 pts

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

- ( ) Yes, slope monitoring along coastal areas is sufficiently reliable to be able to warn of impending tsunamis.
- ( ) No, tsunamis occur from so many different causes they may be considered to occur randomly.
- ( ) 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.

Question 15
2 / 2 pts

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

Correct!

◉ over mountainous regions of the Earth with high elevations

○ over vast portions of the continents at low elevations near sea level

○ over the oceans of the Earth

○ All of these are possibilities.

○ none of these

Question 16
2 / 2 pts

Do meteorologists have the technological ability to provide accurate detection and warnings once tornadoes form?

○ Yes, using satellite imagery.

Correct!

◉ Yes; using Doppler radar systems, rotation in a tornado can be directly detected.

○ No

○ Yes, but only based on eyewitness observations reported to the National Weather Service.

Question 17
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.
- both are a result of wind shear over the surface of water; tsunamis are just larger examples of wind-driven waves.

Correct!

- tsunamis result from the sudden movement of mass against the water; wind shear produces wind-driven waves.
- wind shear is responsible for wind-driven waves; tsunamis result from tidal waves.

Question 18

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 19

0 / 2 pts

During adiabatic expansion,

- air parcels expand because of solar heating.

Correct Answer

- air parcels expand because they are losing heat to the ambient air.
- air parcels expand due to high relative humidity.

You Answered

- air parcels expand because they are gaining heat from ambient air.

Question 20
2 / 2 pts

_____ is a change in velocity and direction of wind as altitude increases.

- Wind convergence
- Correct!
- Wind shear
- Wind divergence
- Wind rotation

Question 21
2 / 2 pts

Which of the following types of sinkholes is considered the most hazardous?

- cover-subsidence sinkholes
- All of these are equally hazardous.
- Correct!
- collapse sinkholes
- dissolution sinkholes

Question 22
2 / 2 pts

Match the form of atmospheric lifting to its description.

Correct!
Convectional lifting

warm air rises because it's

Correct!
Frontal lifting

colliding air masses force

Correct!
Orographic lifting

air mass is forced upward

Question 23
2 / 2 pts

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

counterclockwise

Correct!

clockwise

Question 24
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.

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

Correct!

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

Question 25

2 / 2 pts

The magnitude of the Coriolis force _____ as the size of an object increases.

decreases

Correct!

increases

remains the same

Question 26

2 / 2 pts

What are the most damaging aspects of hailstorms?

Correct!

all of these

damage to vehicles from hailstones

crop loss from hailstones

damage to structures from hailstones

livestock that is killed by hailstones

Question 27
2 / 2 pts

Caves form _____ the water table.

far above

just above

Correct!

just below

far below

Question 28
2 / 2 pts

Below are the temperatures of different air masses. Which air mass temperature would hold the most amount of water vapor?

25°C

Correct!

30°C

10°C

15°C

Question 29
2 / 2 pts

People have been killed and injured by lightning even without being struck directly. How far from a stroke can currents flow and still carry sufficient current to kill or injure a person?

15 meters

8 meters

2 meters

Correct!

20 meters

12 meters

Question 30

0 / 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

You Answered

uplift only of the seafloor crust over an area comparable in size of the state of California.

Correct Answer

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.

None of these; a tsunami did not form as a result of the earthquake.

Question 31

2 / 2 pts

Air temperature represents

Correct!

the average speed of air molecules in motion.

- the maximum speed of air molecules in motion.
- the minimum speed of air molecules in motion.
- the amount of cold in the air.
- the amount of heat in the air.

Question 32
2 / 2 pts

Low pressure air masses form when _____.

- relatively cooler air rises

Correct!

- relatively warm air rises
- relatively cooler air sinks
- relatively warm air sinks

Question 33
2 / 2 pts

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

- oxygen.
- carbon dioxide.
- argon.

Correct!

- nitrogen.

Question 34

2 / 2 pts

The maximum amount of water vapor a 10°C air mass can hold is about 9 g of water per kg of air. If the air mass currently has 4.5 g of water per kg of air, what is its relative humidity?

Correct!

- (selected) 50%
- 75%
- 10%
- 35%

Question 35

2 / 2 pts

Using the wind directions in this video, what type of air mass is located in the middle of Nebraska?

0:00 / 0:03

High pressure

Correct!

Low pressure

Question 36

2 / 2 pts

Can meaningful tsunami warnings be issued, and what is the basis to do so?

Yes, warnings can be issued if a triggering event like an earthquake of the appropriate form is detected. Warnings are most valuable for near-field tsunamis.

No, the random nature of tsunamis means they are unknown to have occurred until they reach coastlines.

Correct!

Yes, warnings can be issued if a triggering event like an earthquake of the appropriate form is detected. Warnings are most valuable for far-field tsunamis.

No, tsunamis form in such a short amount of time that warnings cannot be meaningful.

Question 37

2 / 2 pts

99.9% of the Earth's atmosphere exists within _____of Earth's surface.

5.0 kilometers

Correct!

50 kilometers

0.5 kilometers

- 25 kilometers
- 100 kilometers

Question 38
2 / 2 pts

How does hail form?

- Rain freezes as it falls to the surface in a thunderstorm.
- A winter storm can turn snow into hail with extremely cold temperatures.

Correct!

- Strong updraft in a thunderstorm keeps ice particles in the atmosphere, allowing them to grow larger.

Question 39
2 / 2 pts

High pressure air masses form when _____.

- relatively cooler air rises

Correct!

- relatively cooler air sinks
- relatively warm air rises
- relatively warm air sinks

Question 40
2 / 2 pts

Large tsunamis, those that cause significant damage, occur about every

- six months.

one to two years.

Correct!

fifteen to twenty years.

ten to fifteen years.

five to ten years.

Question 41

2 / 2 pts

An occlude front forms when

an advancing warm front overtakes a cold front.

Correct!

an advancing cold front overtakes a warm front.

two warm fronts combine.

two cold fronts combine.

Question 42

2 / 2 pts

Tsunamis are most often generated by

currents.

Correct!

earthquakes.

tides.

storms.

Question 43

2 / 2 pts

Approximately 60 NOAA DART stations have been deployed in the Pacific Ocean, with more planned for other ocean basins round the world. How do the DART stations work?

DART stations serve as relay networks to speed announcements of an oncoming tsunami.

DART stations detect seismic surface waves moving along the seafloor.

Correct!

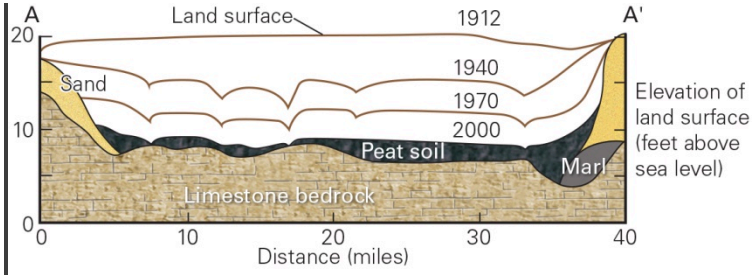
DART stations use pressure sensors on the seafloor to detect the pressure of a passing tsunami to send alerts when a tsunami is detected.

DART stations detect vertical displacements in the water column that may be from tsunamis or wind-driven waves.

Question 44

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?



- none of these
- pumping oil and gas resources from beneath the region
- all of these
- tectonic processes

Correct!

- diversion of surface waters from their natural flow paths to the sea

Question 45

2 / 2 pts

Clouds at ground level are referred to as

- stratus clouds.
- cumulus clouds.
- cirrus clouds.

Correct!

- fog.

Question 46

2 / 2 pts

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

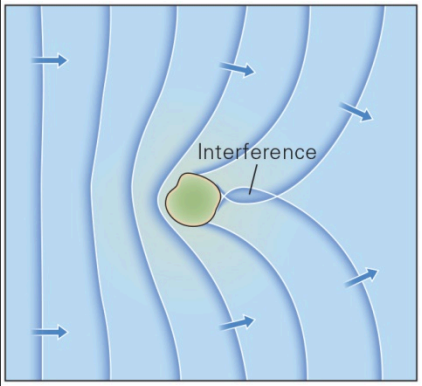
Correct!

- (●) heat index.
- ( ) heat scale.
- ( ) comfort index.
- ( ) relative comfort scale.

Question 47

0 / 2 pts

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



You Answered

- (●) wave reflection.

wave attenuation.

Correct Answer

wave refraction.

wave doubling.

Question 48

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 the equator

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

Question 49

2 / 2 pts

What is an atmospheric front?

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

Correct!

the boundary between different air masses

the location where an air mass first develops its defining characteristics

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

Question 50

2 / 2 pts

Atmospheric pressure is a result of

- winds blowing over the surface.

Correct!

- the weight of the column of air above a location.
- the density of the atmosphere.
- heat contrasts on the surface.

Quiz Score: 92 out of 100