GS106 Spring Term 2002 Final Study Guide

BRING A SCANTRON, PENCILS, PENS, AND CALCULATOR TO THE QUIZ!

RECOMMENDED STUDY TECHNIQUES

1) Follow the "How to Study Physical Science" guide available on the web site.
2) use the concepts below as a guide to help you focus on your notes
3) memorize terms and concepts (make flash cards, rewrite definitions 100 times, etc.)
4) go back over the labs and make sure you can do the tricks / skills
5) review some of the important figures in your lab manual and text
6) review your homework questions and answer sheets

I WOULD STUDY A MINIMUM OF 10-12 HOURS IF I WANTED TO DO WELL ON THE FINAL!

Key Words

Structure of Atmosphere

meteorology
weather
climate
temperature
humidity
precipitation
cloudiness
air pressure
wind speed
atmosphere composition
- nitrogen
- oxygen
- argon
- carbon dioxide

water vapor
- heat capacity
- latent heat

particulate matter
dust
condensating nucleii
ozone (O3)
atmospheric structure
- troposphere
- tropopause

stratosphere
stratopause
mesosphere
mesopause
thermosphere
altitude vs. temp variation
altitude vs. press. variation

Earth-Sun Relation
rotation
revolution
day
speed of rotation
plane of the ecliptic
earth day
earth year
rotational axis
north pole
south pole
equator
axial tilt (23.5 deg.)
insolation
angle of incidence
summer solstice
winter solstice
spring equinox
fall equinox
circle of illumination
tropic of cancer
tropic of capricorn
electromagnetic radiation
atmospheric heat transfer
conduction
convection
radiation
infrared radiation
visible light
ultraviolet radiation
absorption
reflection
greenhouse gas
continental heating
ocean heating
latitudinal heating
general circulation

Moisture

water vapor
precipitation
solid, liquid, gas
heat energy
evaporation
condensation
freezing
sublimation
heat
calorie
latent heat
humidity
specific humidity
relative humidity
vapor saturation
saturation capacity
temperature vs. humidity
temperature vs. air volume
hot air balloon model
dew point
dew
fog
clouds
rain
condensating nucleii
cloud droplets
adiabatic heating

adiabatic cooling
lapse rate
dry adiabatic lapse rate
wet adiabatic lapse rate
stable vs. unstable air
rising air mass
sinking air mass
forceful lifting
covergent lifting
orographic lifting
frontal wedging
cloud form
cirrus
cumulus
stratus
nimbostratus
cumulonimbus
clould base
rain drops
cloud drops
sleet
hail
glaze
advection fog
radiation fog
evaporation fog

Pressure

air pressure
force / unit area = pressure
altitude vs. air pressure
millibar
pounds per sq. inch
barometer
rising barometer
falling barometer
wind
wind and pressure
pressure differential
pressure map
isobars
pressure gradient
coriolis effect
N. Hemisphere - hook right
S. Hemisphere - hook left
clockwise vs. counterclockwise rotation
air deflection
wind speed
surface friction
shear friction
turbulence
jet stream
upper level air
lower level air
cyclone
anticyclone
converging air
diverging air
rising / cooling air
falling / warming air
adiabatic heating
adiabatic cooling
rain vs. sunny weather
global circulation
general circulation
atmospheric heat exchange
latitudinal heating / cooling
convection cells
hadley cells
cooling / sinking air
warming / rising air
equatorial circulation
polar circulation
equatorial low
subtropical high
mid-latitude low
polar high
deserts vs. latitude
rain forest vs. latitude
Mid-latitude westerlies
trade winds
easterly vs. westerly flow
local winds
land breezes
sea breezes

Weather Patterns

air mass
weather fronts
source regions
tropical, polar
maritime, continental
continental polar
continental tropical
maritime polar
maritime tropical
warm - cold air
wet-dry air
Fronts
    cold fronts
    warm front
frontal wedging
occluded fronts
weather vs. frontal position
mid-latitude wave cyclones
lake effect
severe weather
    thunderstorms
    cumulonimbus
    lightening
    thunder
    voltage discharge
    tornado
    funnel cloud
    hurricanes
    tropical cyclone
    ocean-air interaction
    hurricane energy source
    storm surge

Greenhouse Effect

greenhouse gases
water vapor
carbon dioxide
thermal infrared radiation
carbon cycle
carbon loading
industrial age
pre-industrial age
methane
ice cores
ice-gas bubbles
climate proxy
anthropogenic emissions
feedback-response
historic surface temperature
climate proxies
    tree rings
    ice record
paleoclimate
results of global warming
    glacial melting
    sea level rise

sea level expansion
> storm activity
increased flooding
shifting ecosystems
increased evaporation

Paleoclimatology

stable isotopes
oxygen isotopes
O18/O16
stable isotope
radioactive isotope
O16, O18
global ice budget
superposition
biogenic
lithogenic
stratigraphy
isotope equilibrium
paleothermometry
CaCO3
mollusks
forminifera
coral
salinity vs. O18
temp vs. O18
latitude vs. O18
"heavy water"
"light water"
glacial climate
interglacial climate
ice sheet
evaporation
late Wisconsinan ice
global sea level
deep sea drilling
O18 stratigraphy
O18/O16 ratio
global correlation
radiometric dating
insolation
sun spot
sun spot cycle
sun spot - climate response
orbital forcing
Milankovitch Theory
obliquity
eccentricity
precession
angle of earth tilt
orbital path
plane of ecliptic
equinox
solistice
frequency
time series
northern hemisphere
southern hemisphere
fall,winter,spring,summer
circular vs. elliptical path
glacial - cold/wet climate
polar cooling
solar influx
albedo
positive feedback

Key Concepts and Ideas to Think About

Can you label and identify the structure of the atmosphere from surface to outer thermosphere?
Do you know the basic characteristics of each of the layers of the atmosphere?
Do you know the compostion of the atmosphere? Can you list it from memory?
Do you know how the seasons work and why? Daily temperature fluctuations and why?
Do you know about solar influx vs. latitude vs. angle of incidence?
Can you calculation relative and absolute humidity? Do you understand vapor saturation and dew points?
Do you know the mechanisms for lifting of air? Can you sketch them from memory?
Can you sketch / label the basic cloud types?
Do you know the mechanisms of cyclones and anticyclones?
Can you make an interpretation from an isobaric pressure map?
Can you sketch / label the global atmospheric circulation model?
Can you sketch / label warm fronts, cold fronts, and occluded fronts?

Do you know the ins and outs of the greenhouse effect and global warming?

what is paleoclimatology? What types of data are used to reconstruct ancient Earth climates? Why would scientists want to reconstruct ancient Earth climates? Do you know how oxygen isotope records in the sea tell us about glacial and interglacial climates on Earth?

Have you gone over all of your homework questions and memorized the answers?