Physical Geography (GEOG1) Review Guide for Exam 1

What is geography? What do geographers do? Differences between Physical and Cultural Geography; Environmental Spheres;
“Fathers” of geography and modern geography—what were their major contributions?
Basic info about our universe, galaxy and solar system, planets, moon
Terrestrial and Jovian planets—some of their basic characteristics—which and where is Earth in the line up?
Size (diameters/circumference) and Shape of Earth—is Earth a perfect sphere? If not what is it? What did Eratosthenes calculate almost perfectly using sun angles?
Maximum surface relief on Earth—what are the highest and lowest points and what are their elevations?
What are the approximate distances between Earth & Sun—also aphelion and perihelion—when do they occur—how does the distance between Earth and Sun vary throughout the year?
Graticule; Great circle; small circle
Latitude and Longitude—know these in great detail—we spent a lot of time on this.
What are the varying regions of latitude and what degree values do they correspond to? (e.g. tropics, sub-tropics, mid-latitudes etc.)
Why was Greenwich, England chosen as the location of the Prime Meridian?
How do distances vary between latitude lines and between longitude lines? In other words—what is the distance between each degree of latitude? What is the distance between each degree of longitude?
How does Earth’s rotational speed vary (by varying latitude)? What’s the speed at the equator? At the poles? At our latitude of ~37 degrees north?
What kinds of things happen as a result of the earth’s rotation? (Coriolis Effect etc.)
What causes the seasons? What is the tilt of the Earth’s axis? Plane of the ecliptic?
North star/Polaris—why is it important?
Over which latitudes do the sun’s rays strike vertically at different times of year?
Know what is happening at all the 4 important days of the year: Solstices and Equinoxes.
How do daylight and night hours vary throughout the year and at different latitudes?
Analemma—what is it, what causes it, how is it used? Be able to calculate the angle of the noon-day sun given the day of year and latitude of place, the latitude of the sun’s vertical rays on that date (from the analemma). How much variation in the noon-day sun angle occurs throughout a year? Both in distance off the horizon and position along the horizon?
Solstices, equinoxes—when do they occur, what is happening with respect to sun angles and daylight hours.
Time: tropical year, lunar month, solar day, a.m. & p.m./noon-day sun angle/solar time
When, where and how were standard time zones established? How does the system work? How many time zones worldwide? How many degrees of longitude for each time zone? Where is the controlling meridian placed within the time zone with regards to longitude? Be able to calculate time differences between places with different longitudes if you are given the longitudes of each place and the day and time of one of those places. Don’t forget what to do if you cross the International Date Line.
Daylight savings time
What is GPS? How does it work?
What is GIS? How does it work? Give some examples of how it is used. Which examples did Deirdre demonstrate in lecture?
4 types of maps
Map Essentials—types of scale, difference between small and large scales
Map projections—Mercator projection—why so popular? Drawback of this projection?
Isolines—specific types of isolines.
Cadastral Systems and Topographic Maps
Name 2 types of cadastral systems that we discussed. Difference between them—where are they used? what do they use as boundary markers? How does the landscape vary as a result of these two systems?
When and why was the rectangular system established? Where does the rectangular survey NOT apply in the US? How is the rectangular survey organized? (T, R, S)
Topographic Maps:
USGS Quadrangles
Contour lines—contour intervals, relationship between spacing and slope, Rule of Vs,
What benefits does the atmosphere provide to planet Earth and it’s inhabitants?
Composition of the atmosphere; (gases, particulates (aerosols), etc) and their sources
Layers of the atmosphere: what occurs in each layer; how does temperature vary within each layer
Atmospheric pressure and density differences at sea level and high elevations.
Air pollution: natural and anthropogenic sources—discuss.
What is ozone; what is the ozone layer; what function does it provide to planet Earth; human-produced chemicals & ozone depletion; over which regions of Earth is ozone depletion the worst; what did the 1987 Montreal Protocol do to try and remedy this problem
Where is ozone also found in the atmosphere, how does it form & what are its associated problems
What are some dangers associated with UV (ultraviolet) exposure
Differences between weather and climate; 4 elements or components of weather;
What controls weather and climate?
What is insolation; what are the differences between tropical and polar insolation
What is the albedo; which surfaces have high albedo, which have low albedo
Influence of water—maritime vs. continental climates; Influences of altitude/elevation—mountain climates; Topographic barriers—leeward and windward sides of mountains/islands
What are the three most common temperature scales? How is the Celsius scale organized (water boiling point and ice melting point)
2) What are the three most common temperature scales? How does water’s boiling point and ice’s melting point compare between the Celsius & Fahrenheit scales?
3) What is the electromagnetic spectrum?; what is the speed at which solar energy radiates/travels outward from the sun?; which wavelengths of electromagnetic radiation correspond to the visible light portion of the spectrum?; Color(s) with longest and shortest wavelength(s)?
4) What are the 5 key processes involved in heating and cooling the atmosphere? Briefly describe each—give examples.
5) Why is the sky blue? Why are sunsets red? Explain the processes involved.
6) What are the 3 methods of heat transfer discussed in lecture? Briefly describe each and give examples.
7) Explain adiabatic heating and cooling with respect to air rising and descending.
8) Explain the greenhouse effect. Make sure you include info about long and short wavelength radiation.
9) Which atmospheric gases are “good” at retaining heat? Discuss human activities and the sources of greenhouse gases—what has been the trend in the amounts of these gases in the past ~200 years?
10) Compare and contrast the differences in heating and cooling of land versus water. What are the reasons for these differences?
11) How does temperature change vertically in the atmosphere? What is the average environmental lapse rate?