Extra Credit Multiple Choice Questions
Chapters 0 – 2

Note: in all case one answer is better than all others ...

video: How Earth’s Tilt Causes Seasons

Questions:
1. What is currently the angle of the Earth’s tilt?
a) 0 degrees
b) 12.7 degrees
c) 23.4 degrees
d) 43.5 degrees

2. Over what period of time does the Earth’s tilt go from a maximum to a minimum?
a) 1 year
b) 41,000 years
c) 5,000,000 years
d) 62,000,000 years

3. Over tens of thousands of years the maximum and minimum angles of the earth’s rotation axis (from a direction perpendicular to the earth’s plane of revolution around the sun) is:
a) 22.7 to 23.9 degrees
b) 22.5 to 24.1 degrees
c) 22.3 to 24.3 degrees
d) 22.1 to 24.5 degrees

4. In the northern hemisphere, what season occurs when the northern hemisphere is tilted towards the sun?
a) Spring
b) Summer
c) Fall
d) Winter

5. In the video the sunlight illuminates the Earth from:
a) the left in northern winter
b) the left in northern summer
c) the right in northern winter
d) the right in northern summer
e) a) and d)

6. In which seasons do both hemispheres receive the same amount of radiation?
a) Spring and Summer
b) Summer and Fall
c) Spring and Fall
d) Summer
e) Winter

7. Which of the following effects does NOT lead to summer in the northern hemisphere?
a) More hours of daylight
b) More radiation from the Sun hits the northern hemisphere
c) Radiation from the Sun has to go through less atmosphere
d) The Earth is at the point in its orbit closest to the Sun

video: Are Southern Hemisphere Seasons More Severe?

Questions:
1. What is the point in the Earth’s orbit in which the Earth is closest to the Sun?
a) aphelion
b) vernal equinox
c) perihelion
d) autumnal equinox
2. What is the point in the Earth’s orbit in which the Earth is furthest from the Sun? 
   a) aphelion 
   b) vernal equinox 
   c) perihelion 
   d) autumnal equinox

3. When Earth is closest to the Sun it is _____ closer than when it is furthest from the Sun? 
   a) 1% 
   b) 2% 
   c) 3% 
   d) 4% 
   e) 5%

4. In what month does perihelion occur?
   a) January 
   b) April 
   c) July 
   d) October 

5. In what month does aphelion occur?
   a) January 
   b) April 
   c) July 
   d) October 

6. In the video "summer" was denoted by coloring the northern or southern hemisphere:
   a) red 
   b) orange 
   c) yellow 
   d) blue 
   e) violet

7. Although the Earth IS closer to the Sun in southern hemisphere summer, southern hemisphere summer is NOT more extreme because:
   a) distance from the Sun has no effect on the temperature 
   b) the oceans provide a moderating effect that is greater in the southern hemisphere (than in the northern hemisphere) 
   c) the land in the southern hemisphere is higher than in the northern hemisphere and higher locations are cooler 
   d) actually southern hemisphere summer IS much warmer than northern hemisphere summer 

8. The temperature at the south pole is typically colder than at the north pole because:
   a) there is a permanent scientific station at the South Pole thus the weather data are more complete so extreme temperatures are better monitored 
   b) the tilt of the Earth has a greater effect in the southern hemisphere than in the northern hemisphere 
   c) the "ozone hole" over the south pole allows more heat to leave the south pole cooling it 
   d) the south pole is actually very high and higher locations are cooler

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Questions:
1. Does light behave as a wave or a particle?
   a) wave 
   b) particle 
   c) both 
   d) neither

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2. What are particles of light called?
   a) electrons 
   b) photons 
   c) gluons 
   d) neutrons 
   e) protons

3. Light travels the fastest through which medium?
   a) vacuum 
   b) water 
   c) air 
   d) semi-conductors 
   e) no, light travels the same speed through all media

4. What is the speed of light?
   a) $3 \text{ m/s}$ 
   b) $3 \times 10^2 \text{ m/s}$ 
   c) $3 \times 10^8 \text{ m/s}$ 
   d) $3 \times 10^12 \text{ m/s}$ 

5. Light travels so fast that it would travel around the Earth in slightly less than:
   a) $1/10 \text{ s}$ 
   b) $1/9 \text{ s}$ 
   c) $1/8 \text{ s}$ 
   d) $1/7 \text{ s}$ 
   e) $1/6 \text{ s}$

6. In the video it states that when visible light is refracted through a prism the ___ wavelengths are bent the most:
   a) violet and blue 
   b) red and orange 
   c) green 
   d) yellow

7. Which of the following types of electromagnetic radiation has the longest wavelength?
   a) visible light 
   b) gamma rays 
   c) ultraviolet light 
   d) radio waves

8. In the figure in the video what "familiar" object is about the same size of visible light?
   a) honey bee 
   b) pinpoint 
   c) protozoans 
   d) molecules 
   e) atoms

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Video: Introduction to Light