ST/Ste Final HW Based on Loose Bits

ST

Guiding Controls

1. What is the guiding control for a sliding patio door?
   The track.
2. What is the guiding control for the front wheel on a bicycle?
   The fork(metal parts on each side of the wheel) and axle.
3. What is the guiding control for the screw on a clamp?
   Threads inside the metal circle that the screw goes through.
4. Match each of the above controls with the following:
   A) Translational guide: 1
   B) Rotational guide: 2
   C) Helicoidal guide: 3

Glaciers

5. What causes a glacier to form?
   As snow accumulates the pressure on the old snow underneath increases its density, eventually turning it into ice. With less friction the solid mass moves, turning it into a glacier.
6. A) What happens to the level of the sea when many glaciers slide into it?
   It will rise as part of the ice displaces the water.
   B) What happens to the level of the sea after many icebergs melt?(Remember an iceberg is already in the water) Nothing. Try it with an ice cube. The volume of water created by melting is less than that of the solid iceberg (or cube). That volume of water will simply take the place of what was already displaced water while the ice was floating.

STE

Buffering Capacity of Soil

7. What is a buffer?
   It is combination of chemicals whose pH will not change by adding small amounts of acid or base to it.
8. What happens to soil with a good buffering capacity if a small amount of acid is added to it?
   The pH remains unchanged.

Reading Resistance Charts

Use the chart to find the resistance, if on a resistor, you have the following lines:

9.

Appendix 4

Resistor Colour Chart

Colour	Black	Brown	Red	orange	Yellow	Green	Blue	Purple	Grey	White
Digit	0	1	2	3	4	5	6	7	8	9
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^8	10^9

a) red-orange-yellow…….brown…….

$234 \times 10^1 = 2340\ \Omega$

b) orange-black-black…….orange……

$300 \times 10^3 = 300\,000\ \Omega = 300\ k\Omega$

c) brown-yellow-black……..yellow…….

$140 \times 10^4 = 1\,400\,000\ \Omega = 1.4\ M\Omega$