**Review Sec I Term 2 Answer Key**

**The Material World**

1. List the steps of the scientific method and briefly describe each.

**Initial Observation**: Notice a phenomenon in nature.

**Question:** Ask a question about your observation that can be answered by doing an experiment.

**Hypothesis:** Answer to your question with as much detail as possible (an educated guess)

**Controls and Variables:** Controls are factors that are staying the same or constant. Variables

 are factors that change.

**Materials:** List the exact quantity and size of materials you will be using - be as specific as possible.

**Procedure:** Enumerate all the steps, as specifically as possible, that you will follow to complete your

 experiment

**Results:** Present your quantitative (numerical) and/or qualitative (descriptive) observations in point

 form and/or table form

**Analysis:** Describe your ­­­­­­­­­­­­­­­­­­­­­results in sentences and using graphs

**Conclusion:** Accept or reject your hypothesis and why. Explain the scientific principle behind your

 Experiment. List any possible errors.

2. Define mass and give 2 examples of objects with the units mg, g, and kg. How would you find the mass of a solid and of a liquid?

**Mass:** amount of matter present in a substance. Examples: mg – medicine, postage stamp; g – orange, candle; kg – person, truck.

To find the mass of a solid – zero a triple balance beam (scale) and place object on platform. Move the largest slide first, then the middle slider, and finally the smallest one. Record mass.

To find the mass of a liquid – zero a triple balance beam (scale) and place an empty graduated cylinder on the platform. Record mass. Add liquid then find new mass. Subtract the mass of the empty cylinder for the total mass and the result is the mass of the liquid.

3. Define volume and describe how to find the volume of a regular object and irregular object. What are the units associated with each?

**Volume:** amount of space occupied by a substance.

To find the volume of a regular object: measure the length, width, and height, and multiply them all together. The unit is cm3.

To find the volume of an irregular object: Put water in a graduated cylinder and record the volume. Add irregular solid and record total volume. Subtract initial volume from total volume. This will be the volume of the object.

4. Define temperature and state the boiling point and freezing point of water. **Temperature is the indication of the average speed of the movement of particles. The Boiling point of water is 100 oC and the freezing point is 0 oC.**

5. What instrument is used to measure temperature? **Thermometer**

6. Define thermal expansion. When **particles move at a higher temperature, they take up more room**.

7. State 3 units of temperature**. oC (Celsius), oF (Fahrenheit),oK (Kelvin)**

8. State the pH levels for an acid, a base, and a neutral substance. **Acid 1-7 (below 7), Neutral 7, Base 7-14 (above 7)**

9. How is litmus paper used to determine if a substance is an acid, a base or is neutral?

 **Acid**: blue lltmus paper turns red

 **Base:** red litmus paper turn blue

  **Neutral:**  neither red nor blue litmus paper changes colour

**The Technological World**

1. Define simple machine.

 **Simple machine:** a mechanical system that transfer force directly. It allows us to use less force

 but the same work. They change the direction of the force.

2. List the types of basic machines and give two example of each.

 **Lever:** tweezers, crowbar

 **Inclined plane:** moving ramp, staircase

 **Pulley:** crane hoist, clothesline

 **Wedge:** door stop, an axe

 **Wheel and axle:** cars, wagon

3. List the three classes of levers and give two examples of each.

 **1st class –** teeter totter (seesaw)

 **2nd class –** nutcracker

 **3rd class -**  hockey stick

4. How is the class of lever determined? **When identifying the effort force, fulcrum, and load – the one in the middle determines the class of lever.**

5. State whether each statement is true or false: a) machines allow humans to use less force **True**

 b) machines allow human to do less work **False**

 c) the closer to the fulcrum the load is, the more

 effort force must be applied. **False**

6. Define fulcrum, load, and effort force, and indicate them on a diagram.

 **Fulcrum –** the pivot point

 **Load** – the object that is being moved

 **Effort Force –** the force that you are applying

**2nd class lever**

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Effort force

Fulcrum

Load

7. What three things are required to make a technical drawing? **A pencil and eraser, blank white paper, and a ruler.**

8. What three things do we find on a technical drawing? **Straight lines, measurements, and a scale.**

9. How is the front view determined? **The view that gives the most information is the front view.**

10. Be able to create a technical drawing of a given object. **\*\*\* make sure you bring a ruler with you\*\*\***

**The Living World**

1. Be able to distinguish a plant cell from an animal cell. **When looking at cells – a plant cell have a cell wall and chloroplast which are not found in animal cells. Also the vacuoles of a plant cell are much larger than in animal cells.**

2. List the organelles in a cell and their role or function. Which two are found only in plant cells?

**Cell Membrane:**  surrounds and protects the cell, controlling substances entering and exiting the cell.

**Cytoplasm:** circulates throughout the cell distributing nutrients to different parts of the cell.

**Nucleus:** DNA and can be considered the brain of the cell because it controls all activities.

**Vacuole:** These balloon-like structures store nutrients and help eliminate waste.

**Chloroplast:** is responsible for photosynthesis in plants.

**Cell wall:** This is formed from material called cellulose and supports the plant cell.

Only **chloroplast** and **cell wall** are found in plant cells

3. Label a flower diagram. **Labels: stamen, anther, pollen grains, filament, pistil, stigma, style, ovary, ovules. See textbook for diagram.**

4. Describe the characteristics of sexual and asexual reproduction in plants.

 **Sexual:** need male and female parts and offspring is similar to parent but unique.

 **Asexual:** male and female parts not needed and offspring is identical to parent.

5. List the 3 types of asexual reproduction and 3 types of sexual reproduction in plants.

 **Asexual:** leaves, stems, and roots.

 **Sexual:** flowers, cones, and spores.

6. Know the 15 definitions associated with plant reproduction (cotyledon, seed, seed coat, asexual reproduction, sexual reproduction, ova, spermatozoon, fertilization, pollination, cross-pollination, self-pollination, angiosperm, gymnosperm, spores, and embryo)

**Asexual reproduction**: Method of reproduction that does not require male and female parts. The offspring is identical to parent.

**Sexual reproduction**: Requires male and female parts. The offspring is similar to parents but unique.

**Cotyledon**: Food reserves in a seed

**Embryo**: A small immature plant.

**Seed**: Contains everything needed to produce a new plant

**Seed coat:** Protective covering surrounding the seed

**Fertilization**: Combination of the male and female gametes (sex cells)

**Pollination**: The process in which the pollen grains land on the stigma of the pistil in order to fertilize the flower

**Self**-**pollination**: Transfer of pollen grains to the pistil of the same flower

**Cross-pollination**: Transfer of pollen grains to the pistil of a different flower

**Angiosperms**: Flower bearing plants

**Gymnosperms**: Cone bearing plants

**Spermatozoon**: The male gamete (sex cell)

**Spores**: Cells that contain complete genetic material and can therefore transform in a young plant without fertilization.

**Ova**: The female gamete (sex cell), also known as the eggs.

7. Define the following: population, taxonomy. Give two examples of a population.

**Population:** The number of a species living in a particular area ex there are approximately 15 000 polar

 bears in Canada; there are approximately 9000 Mountain Zebras in South Africa.

**Taxonomy:** The scientific way of classifying and naming living organisms. Ex. polar bears have the scientific name *Ursa maritimus*.

8. What are the criteria used to determine whether something is a living organism?

* **Living things are made of cells.**
* **Living things obtain and use energy.**
* **Living things grow and develop.**
* **Living things reproduce.**
* **Living things respond to their environment.**
* **Living things adapt to their environment.**

9. What are the criteria used to determine if organisms are of the same species? **In order for two organisms to be classified as the same species 1) they must share similar characteristics 2) the opposite sexes can mate to reproduce in their natural habitat 3) the female gives birth to one or more offspring that survive and 4) upon reaching maturity, the offspring can reproduce successfully.**

10. Describe physical and behavioral adaptations and give two examples of each.

**Physical adaptation:** A physiological characteristic an animal exhibits in response to its environment. Example a dog’s fur thickens in the winter; a hummingbird’s beak is long and slender so it may drink nectar

**Behavioral adaptation:** A behavioral characteristic an animal exhibits in response to its environment. Example – bee’s perform a “dance” which indicates a food source; a polar bear stands on its hind legs when threatened.

11. Given a species name, ex *Homo sapiens*, state the genus name. What is the common name of *Homo sapiens*? **Genus: Homo**

 **Common name: human beings**

12. What are the components of an animal’s habitat? **Food and water; Shelter; Other of the same species to mate with; and Climate to which the species is adapted.**

13. What are the components of an animal’s ecological niche? **An animal’s habitat and its diet and cycle of activity.**

14. Describe the type of bird beak that is appropriate for a bird that eats: a) meat **- short, hooked, powerful** b) berries **– short and slender** c) nuts and seeds **– short, wide at base, powerful** d) fish  **- long and dagger-like** e) insects  **- short and powerful**