

Diwali Vacation Assignment

Class 9 Science

Physics

1. Write the common unit of density.
2. What is the density of water in SI units ?
3. List the forces that act on an object when it is immersed in water. state the direction of these forces. Draw a diagram also.
4. What force acting on an area of 0.5 m^2 will produce a pressure of 500 Pa ?
5. The density of gold is 19 g/cm^3 . Find the volume of 95 g of gold.
6. Explain why big boulders can be moved easily by flood.
7. Explain why wooden (or concrete) sleepers are kept below the railway line.
8. Calculate the density of an object of volume 2000 cm^3 and mass 9 kg. State whether this object will float or sink in water. Give reason for your answer.
9. If 784 J of work was done in lifting a 20 kg mass, calculate the height through which it was lifted. ($g = 9.8 \text{ m/s}^2$)
10. Project : Prepare a PPT presentation on Applications of Archimedes principle. Explain at least events in detail.

Chemistry

1. Write the laws of chemical combination.
2. 4.0g of sodium carbonate reacted with 10g of hydrochloric acid to form 11.5g of sodium chloride and 'x'g of carbon dioxide gas. Calculate the amount of carbon dioxide gas produced.
3. Write the symbols of sodium, copper, gold, silver, lead, iron, mercury, potassium.
4. Define atomicity. Calculate the atomicity of Na_2CO_3 , $(\text{NH}_4)_2\text{SO}_4$, $\text{Ca}(\text{HCO}_3)_2$.
5. What are molecules? Give two examples each of molecules of element and compound.
6. What is the difference between homoatomic and heteroatomic molecules? Give one example each.
7. Atomic mass of magnesium is 24u. What does it signify?
8. Formula of the carbonate of a metal M is M_2CO_3 . Write the formula of its oxide.

9. Identify the anions and cations in the following compounds: NH_3 , ZnS , CaCO_3 .
10. Write the compounds formed from the following ions
Cations: Ca^{2+} , Na^+ , Al^{3+} , NH_4^+
Anions: SO_4 , CO_3 , HCO_3 , PO_4

Biology

A. Give reasons, why?

1. Skeletal connective tissue is also known as supporting connective tissue.
2. Cardiac muscles are similar to both striated and unstriated muscles.
3. Cork acts as a protective tissue.
4. Animals of colder regions and fish of colder waters have a thicker layer of body fat under the skin.
5. Branches of a tree move and bend freely in high wind velocity.

B. Match the columns.

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| 1. Areolar tissue | Subcutaneous layer |
| 2. Skeletal muscle | Buoyancy |
| 3. Skin. | Fluid connective tissue |
| 4. Cartilage | Striated muscle |
| 5. Blood | Stratified squamous epithelium |
| 6. Adipose tissue | Surface of joints |
| 7. Aerenchyma | Packing tissue between various organs |

C. Higher order Thinking Skills.

1. Why are vacuoles absent in meristematic tissue?
2. Due to excessive workout, an athlete was suffering from fatigue. He was advised to take rest for sometime and rejoin
 - a. Why did he feel tired after the exercise?
 - b. Why was he asked to take rest and then join the practice again?
3. Manik saw his father watering his garden plants in hot weather. He noticed that water doesn't stick to the plant leaves and leaves become dry but look fresh. He asked following questions to his teacher
 - a. Which tissue forms the outer covering of a plant and does it have a protective role to play? How ?
 - b. Why does water not stick to the leaves?
