

PON VIDYASHRAM

HALFYEARLY WORKSHEET

Class IX

Physics : Gravitation

Chemistry : Atoms and molecules

Biology : Improvement in food resources

I. Write in one or two sentences:-

1. What is the difference between $2H$ and H_2 .
2. Identify the polyatomic ions present in the following compounds:
 - a. $MgSO_4$
 - b. Na_2CO_3
3. Differentiate between an atom and ion.
4. If the valency of an element A is 3, write the chemical formula of its oxide.
5. Derive the formula of the compound formed between Na^+ and SO_4^{2-} .
6. State the atomicity of the following:-
 - a. Ozone
 - b. oxygen
 - c. sulphur
 - d. phosphorous.
7. Write the chemical formula of all the compounds that can be formed by the combination of the following ions:-
 Ca^{2+} , K^+ , Fe^{3+} , Cl^- , SO_4^{2-}
8. Give an example for each of the following:-
 - a. A divalent anion
 - b. a trivalent cation
 - c. a monovalent anion
9. Calculate the molar mass of $CaCO_3$.
10. Calculate the number of moles present in 3.011×10^{23} number of oxygen atom.
11. What is the source of centripetal force that a planet require to revolve around the sun? On what factors does that force depend on?
12. Give reason
 - a. Moon does not have atmosphere.
 - b. If you jump on the moon you will be much higher than, if you jump on the earth.
13. State the condition under which an object floats on the liquid. what is the volume of the liquid displaced by the object?
14. Write the difference between 'g' and 'G'?
15. The gravitational force between two force is 'F'. How will this force change when
 - a. The distance between them is reduced to half?
 - b. The mass of one of the object becomes 4 times?
16. Why is Newton's law of Gravitation called as the universal law?
17. A heavy object becomes lighter in water when immersed in it. which force is responsible for this?
18. Name the scientist who discovered the value of universal gravitational constant?
19. If suddenly the gravity of the earth becomes zero, then in which direction the moon begin to move if no other celestial body affects it.
20. A man buys 800 gm of gold at the poles . what will be the weight of the gold at the equator?
21. Find the mass of $5m^3$ of cement of density of 3000 kg m^{-3} .

22. What are the three ways by which insect pest attack the crop plants?
23. State the three advantages of fertilizers over manures.
24. State four desirable traits for which poultry birds are improved.
25. Differentiate between roughage and concentrate with reference to animal feed.
26. What are the two main groups of cattle feed? State the importance of each.
27. To increase the yield of crop, a farmer grew two different types of crops alternating each other. What is this practice called? What precautions should be kept in mind while selecting the crops?
28. State the desirable agronomic features of fodder crops.
29. Name two common weeds that you have observed. State two methods which may be adapted by farmers to prevent weeds.
30. Name two marine fish of high economic value. Also write the scientific names of each prawns found in fresh water and marine water.

II. Write briefly:

1. Calculate the mass in each of the following:-
 - a. 0.5 mole of Hydrogen gas.
 - b. 0.5 mole of hydrogen atom.
2. a. Convert 12 g of oxygen gas into mole.
c. Find the mass of 0.5 mole of Na_2CO_3 .
3. A 0.48 g sample of compound of oxygen and Boron was found by analysis to contain 0.192 g of Boron and 0.288 g of oxygen. Calculate the percentage composition of the compound.
4. An atom has less number of electrons as compared to the normal atom.
 - i) What name can you suggest for this particle? Give reason.
 - ii) Does this particle belong to metal or non-metal? Is there any exception to it?
5. Calculate the mass of the following:-
 - i) 2 moles of carbon dioxide.
 - ii) 6.022×10^{23} molecules of carbon dioxide.
6. To estimate the height of a bridge over a river, a stone is dropped freely in the river from the bridge. The stone takes two seconds to touch the water surface in the river from the bridge. Calculate the height of the bridge. $g=9.8\text{m/s}^2$
5. How much would a 70 kg mass weigh on the moon. What would be his mass on the earth and the moon. [acceleration due to gravity on the moon= 1.63m/s^2]
6. A woman is wearing sharp heeled shoes. If the mass of this women is 50 kg and the area of one heel is 1cm^2 . Calculate the pressure exerted on the ground when the women stand on just one heel. ($g=10\text{m/s}^2$)
7. When an iron object is immersed in water, it displaces 10 kg of water. How much buoyant force is acting on the iron object in Newton's? ($g= 10\text{m/s}^2$)

8. What is composite fish culture system? State one advantage and one disadvantage of this system.
9. How do farmers provide green manure to their crop field?
10. Name the system adapted to breed local and imported fish species. Give examples of fish grown in this system. State advantages of this system.
11. What is pasturage? Name some local variety of honey bees.
12. Which sea animal yield pearls? Also give the name of shell fish of high economic value.

III. Answer in details:-

1. Calculate the number of moles in
 - a. 12.044×10^{23} atoms of carbon.
 - b. 64 g of oxygen atom.
 - c. 66 g of CO₂ molecule. { atomic masses o= 16, c= 12 }
2. a. If one mole of sodium atom weighs 23g, what is the mass of one atom of sodium?
 - b. Calculate the no of molecules in 50 g of CaCO₃.
3. a. Calculate the percentage of oxygen in H₂O₂.
 - b. Calculate the no of moles in 56 g of N₂ gas.
 - c. Calculate the mass 0.50 moles of Ca atom.
4. Find out the no of particles in
 - a. 5 moles of methane gas.
 - b. 92 g of sodium.
 - c. The atomic mass of calcium is 40 u. what will be the number of calcium atom in 0.4 u of calcium?
5. Find out the mass of
 - a. 0.2 mole of N atoms.
 - b. 1.4 mole of Al atoms.
 - c. 0.5 mole of HCl molecule.
5. a. State the principle of floatation.
 - b. A floating boat displaces water weighing 6000 Newton.
 - i) what is the buoyant force on the boat?
 - ii) what is the weight of boat?
6. a. State Archimedes principle.
 - b. How does a boat float in water?

- c. what are fluids?
7. State kepler's three laws of planetary motion. Draw diagrams to illustrate these.
 8. Explain briefly the five factors for which the variety improvement of crop is done.
 9. State the advantages of intercropping and crop rotation. what is mixed cropping?
 10. How do you differentiate among capture fishing, marine culture and aqua culture?
 11. Give the scientific name of cows and buffaloes. How do good animal husbandry practices benefit farmers?
 12. a. What are the general symptoms of sick animals? Mention any two points.
b. what are the two types of internal parasites that infect cattle? Which organs do they infect?

XXXXXXXXXXXXXXXX