PHYSICS

1. Define weight. Give two characteristics of weight of a body. (1)

2. State Archimedes principle. (1)

3. a) What is meant by free fall?
    b) Derive the relation between g and G. (2)

4. A ball is thrown vertically upwards with a velocity of 49m/s. Calculate the maximum height that it will reach and the total time it takes to return to the surface of the earth. (2)

5. Give reasons for the following:
    a) It is difficult to hold a school bag having thin and strong string.
    b) The iron nail sinks but a ship floats on water.
    c) Deep sea divers wear special suits. (3)

6. a) State the universal law of gravitation and give its mathematical expression.
    b) What will be the gravitational force between two bodies each of mass 1 kg kept at a distance 1m from each other?
    c) Give two importance of the universal law of gravitation.
    d) If the moon attracts the earth, why does the earth not move towards the moon? (5)

CHEMISTRY

1. Which postulate of Dalton's atomic theory can explain the law of definite proportions? (1)

2. Define the following terms:
    a) relative atomic mass   b) polyatomic ion (1)

3. Define formula unit mass. Calculate the formula unit mass of K_2CO_3.
    (Given the atomic masses of K = 39u, C=12, O=16) (2)

4. a) Write the chemical formula of the following compounds:
        i) Calcium hydroxide   ii) Sodium sulphide
    b) Write the names of the following chemical compounds:
        i) $Al_2(SO_4)_3$ ii) MgO (2)

5. a) Calculate the number of the moles for 22g of CO_2.
        (Atomic mass C = 12, O = 16)
    b) What is the mass of 3.011×10^{23} N atoms?
        (Atomic mass N = 14)
    c) Calculate the number of particles in 4 moles of aluminium atoms. (3)

6. a) State the law of conservation of mass. Explain the law with the help of an activity.
    b) If 56g of nitrogen reacts with 12g of hydrogen, calculate the amount of ammonia formed as the product. Nitrogen + Hydrogen $\longrightarrow$ Ammonia. (5)

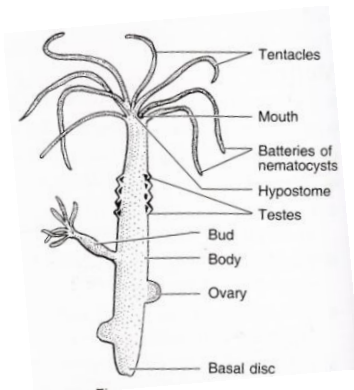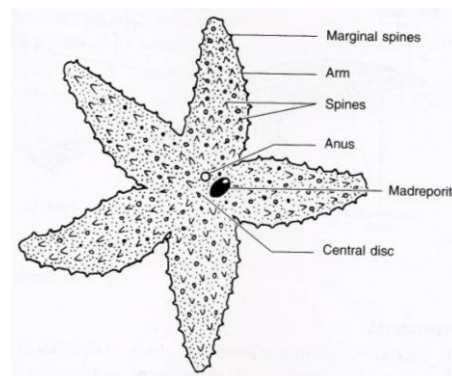**BIOLOGY**

1.   Name the following: (½ x 4 = 2)
        a)   The basic unit of classification.
        b)   A tough complex sugar which forms the cell wall of fungi.
        c)   An exotic breed of cow.
        d)   The phylum to which earthworm belongs.

2.   State any two conditions essential for being free of disease.   (1)

3.   Classify the following based on number of chambers in their heart   (½ x 1 = 1)
        Rohu, Crocodile, Frog,   Whale.

4.   Give reasons :   (3)
        a)   Bryophytes are called amphibians of the plant kingdom.
        b)   Animals of phylum platy helminthes are called flatworms.
        c)   Whales are not grouped in the fishes.

5.   a)   Write any two difference between reptilia and aves.   (2)
        b)   Write any two conventions followed while writing the scientific names.

6.   Write any two characteristics which make Italian bee better than Indian bee.   (1)

7.   Define organic farming.   (1)

8.   (1)

(Fig. 1)   (Fig. 2)

Identify the organism and writes the name of the phylum which they belong.

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