SUMMATIVE ASSESSMENT – II SCIENCE Class – IX [code: CYZ129H] CPS
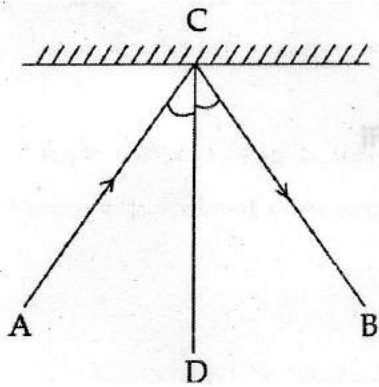
SECTION-A

1. How did Berzelius assign symbols to the elements ? — 1

2. Which scientist concluded that size of nucleus is very small as compared to size of an atom ? — 1

3. Differentiate between cryptogamae and phanerogamae. — 1

4. Find the wavelength of sound for the frequencies up to 120 kHz at which a bat can hear it. Take speed of sound in air 344 m/sec. — 2

5. Define potential energy. Write an expression for potential energy. Write the SI unit of potential energy. — 2

6. Calculate the number of moles present in : — 3
   (i) 3.011×10^{23} number of oxygen atoms
   (ii) 60g of calcium
   [Given that atomic mass of Ca $= 40u$, Avogadro No. $= 6.022 \times 10^{23}$]

7. (a) Answer the following questions : — 3
      (i)   Name the scientist who discovered protons.
      (ii) What is the charge and mass of a proton ?
      (iii) Where is proton located in an atom ?
   (b) An atom of an element has mass number 28 u and its atomic number is 14. How many neutrons does it have ? Also name the element.

8. State three points of differences between an atom and a molecule. — 3

9. Most mammals give birth to young ones. — 3
   (a) How do they nourish their young ones ?
   (b) Name two egg-laying mammals.

10. How can you justify the statement 'prevention of diseases is better than cure' ? — 3

11. Given below are few situations : — 3
    (i) Geeta of Class IX was having common cold. She sits with Sarika who also develops the diseases.
    (ii) Animesh of Class IX shifted to a new residence, with his family, where water purification system has not been installed yet. He develops Cholera and dysentery.
    Associate these situations with their mode of transmission and assign appropriate category to them.

12. A body of mass 1.5 kg is thrown vertically upwards with an intial velocity of 15 m/s. What will be its potential energy at the end of 2 s ? — 3
    (take $g = 10$ m/s^2)

13. (a) Explain why a completely immersed bottle in water when released bounces back on the surface. — 3
    (b) Why does a bucket of water weighs less inside the well water ?

14 Find the distance of cloud from you when you hear a thunder 3 seconds after the lightning is 3
seen. Given speed of light $= 3 \times 10^8$ m/sec speed of
sound $= 330$ m/sec. Why is lightening seen a few seconds before the thunder is heard during a
thunderstorm ?

15 State Archimede's Principle. Write its two applications. 3

16 A Goldsmith measured the purity of the gold by using a special measuring device. 3
He told the customer that there was impurity present in gold ornament that he
wanted to buy and was not of twenty two carats but 18 carat jewellery.
(a) How can we find purity of gold?
(b) What is the unit of relative density?
(c) Why did the goldsmith disclose impurity in the gold ornament ?

17 (a) Define isotopes. Give any two uses of isotopes in the field of medicine. 5
(b) Explain why chlorine always has relative atomic mass of about 35.5. u.

18 In the hierarchy of classification, there are different groups. Out of the groups mentioned 5
below answer the following questions :
Sub-groups : Genus, Order, Division, Class, Family. *Phylum* .
(a) Name the group that has maximum number of organisms.
(b) Name the group that has maximum number of common   characters.
(c) Division : Plants : : _____ : Animals
(d) Which group form is part of the scientific name ?
(e) Arrange the above sub groups from highest to lowest levels in   hierarchy.

19 Explain giving reasons: 5

(a) Balanced diet is necessary for maintaining healthy body.

(b) Health of an organism depends upon the surrounding environmental conditions.

(c) Our surrounding areas should be free of stagnant water.

(d) Social harmony and good economic conditions are necessary for good health.

20 (a) Enlist two forces which act as on a body when it is immersed in a liquid. State the 5
condition for a body require to float or sink in a liquid.

(b) Why does an iron nail sink and a piece of wood floats when placed on the surface of water.

21 (a) A steel needle sinks in water but a steel ship floats. Explain how ? 5

(b) Why do you prefer a broad and thick handle for your suitcase ?

Section – C

25. After doing an experiment to verify the laws of reflection of sound, a student drew the figure. In the figure, ∠ACB is 54°. The angle of incidence is :   1

    (a)   54°   (b)   44°

    (c)   27°   (d)   22°

26. A cuboid of dimensions l, b and h (h>l>b) is placed on the surface of levelled sand. The surfaces in the correct in order of increasing pressure is :   1
    (a)   lb<hb<hl   (b)   hb<hl<lb
    (c)   hb<lb<hl   (d)   hb=lb=hl

27. To find the velocity of a pulse using a slinky Riddhi asked her teacher regarding the features of spring she should use. The correct features are :   1
    (a)   long, flexible and soft   (b)   short, flexible and soft
    (c)   short, flexible and hard   (d)   long, non-flexible and soft

28. Moss is a bryophyte. The feature that confirms this fact is :   1
    (a)   undifferentiated plant body called thallus
    (b)   presence of false roots rhizoids and spore bearing capsule
    (c)   true roots, leaves and spore bearing sori
    (d)   naked seeds

29. If 'X' g of Magnesium combines with 'Y' g of Oxygen and forms 'Z' g of Magnesium oxide, then to verify the law of conservation of mass, the correct equation is :   1
    (a) $X + Z \longrightarrow Y$ (b) $X + Y \longrightarrow Z$
    (c) $X - Y \longrightarrow Z$ (d) $Y + Z \longrightarrow X$

30. Adding of $BaCl_{2(aq)}$ to $Na_2SO_{4(aq)}$ should be done: 1

    (a)   Slowly without stirring   (c)   Fast without stirring

    (b)   Slowly with constant stirring   (d)   Very fast with constant stirring

31. A student during his/her field visit observed a young plant showing a long brown coloured main root with many lateral branches. These branches were unequal in size and provided with root hair on it. She/he identified it as a :   1

    (a) stilt root   (b) fibrous root

    (c) prop root   (d) tap root

32. Anirudh compared the flowers of a monocot plant and a dicot plant and concluded that bisexual flowers are characteristic of :   1
    (a) angiosperm-monocotyledonous plant.   (c) gymnosperm-monocotyledonous plant.

    (b) angiosperm-dicotyledonous plant.   (d) gymnosperm-dicotyledonous plant.

34 You are given a sphere of volume 33 cm³. If you are asked to select a best suited spring 2
balance to determine its weight, then what should be the range of the spring balance ?
(The sphere is made of an alloy of density 7 g cm⁻³)

33 Caterpillar like structure in the stages of life cycle of a mosquito is : 1
(a) Pupa (b) Larva (c) Egg (d) Nymph

35 When a body is fully immersed in a liquid, fill in the blanks on the basis of your observations. 2

(a) The apparent loss in its weight will be _____ in denser medium.

(b) The apparent loss in above case (a) is due to _____ thrust exerted by the liquid.

36 Write one main feature each of the phylum Arthropoda and Annelida. 2

SOLUTION

1 By taking one or two letters of the name of the element 1

2 E. Rutherford 1

3 Cryptogamae have hidden reproductive organs. Eg. thallophyta, bryophyte and pteridophyta. 1

Phanerogamae have well differentiated reproductive tissues. Eg gymnosperms and phanerogams.

4 $f = v/\lambda = 344/ 120000 = 0.00286666666 = 2.8 \times 10^{-3}$ m 2

6 (i) 6.022×10^{23} oxygen atoms contain 1 mole

$\Rightarrow 3.011 \times 10^{23}$ oxygen atoms will contain $(1/6.022 \times 10^{23}) \times 3.011 \times 10^{23} = 0.5$ mole

(ii) 40 g calcium contains = 1 mole $\Rightarrow$ 60 g of calcium contains $(1/40) \times 60 = 1.5$ mole

7 (a) (i) E. Goldstein (ii) Charge is +1. The relative mass of a neutron = 1u.

(iii) Protons are located in the nucleus. (b) Number of neutrons = 28 – 14 = 14. Element is silicon.

8. Atom : (1) An atom is the smallest particle of an element. (2) It can take part in a chemical reaction. It

may or may not exist freely. (3) Each atom of an element shows all the properties of the element

Molecule : (1) The smallest particle of matter (element or compound). (2) It can exist in a free state. (3)

The properties of a substance are the properties of its molecules

9 (a) They have mammary glands for the production of milk. (b) Platypus, echidna

10 Prevention of diseases is better then cure because : (a) Once some one has a disease, their body

. functions are damaged and may never recover completely. (b) Treatment will take time (c) The person

suffering from an infectious disease can serve as the source of infection for other people. So there will

be multiplication of difficulties.

11 (i) Transmission By Air (ii) Transmission By Water Communicable diseases

12. S = ut + ½gt2 = 15 × 2 + ½ × 10 × 4 = 50 m and P.E. = mgh = 1.5 × 10 × 50 = 750 joules

13. (a) This is because up thrust act on the body is greater than its weight (b) this is because of up thrust act on it which reduce its actual weight.

14 . Distance = speed x time =330 x 3 = 990 m

Lighting is seen a few seconds before thunder as speed of light is more than speed of sound

15. Archimedes' principle state that "When a body is immersed fully or partially in a fluid, it experiences an upward force that is equal to the weight of the fluid displaced by it.

It is used in designing ships and submarines. Lactometers, which are used to determine the purity of milk.

16 (a) Density of gold can be found by finding mass and volume. If we get correct value of density, then gold is pure. $d = m/v$. (b) Relative density has no unit (c) He is honest and guides his customers correctly.

17. (a) Isotopes are defined as the atoms of the same element, having the same atomic number but different mass numbers. An isotope of cobalt is used in the treatment of cancer and an isotope of iodine is used in the treatment of goiter.

(b) Chlorine occurs in nature in two isotopic forms, with masses 35 u and 37 u in the ratio of 3:1.

The mass of an atom of any natural element is taken as the average mass of all the naturally occurring atoms of that element.

The average atomic mass of chlorine atom, on the basis of above data, will be = 35x ¾ + 37x ¼ = 35.5

18. (a) Division (b) Genus (c) Phylum (d) Genus (e) Division, Class, Order, Family, Genus

19. (a) It provides raw materials and energy in appropriate amount which is needed for the substances such as carbohydrates, protein, fats etc. That is essential for the proper growth and functioning of the healthy body.

(b) Health is a condition of physical, social and mental well being which depends very much on our surrounding environmental conditions. If the surroundings are unhygienic then we may get diseased.

(c) Stagnant water carries many water borne diseases and insect vectors flourish in stagnant water that cause disease in human beings.

(d) Human beings live in societies and different localities like villages or cities which determine the social and physical environment. Both these environment and economic conditions have to be in harmony to have better living conditions and good health.

20 (a) Buoyancy and gravitational force

If weight of the body is more than up thrust act on it then body will sink.{W > U (sink)}

If weight of the body is less than up thrust act on it then body will floats{ U > W (floats)}

(b) Volume of the water displaced by iron nail is less than that of piece of wool. That is why more buoyancy force act on piece of wood and it floats on the surface of water.

21 (a) Ship displace more water than needle as volume of ship is more than that of needle. Since up thrust depend on volume of object (U = Vdg)more up thrust act on ship and ship floats.

(b)Pressure act on the body inversely depends on surface area of contact. {P α 1/A} explain more

Section – C Ans

25	(c)	1
26	(a) lb<h b<hl	1
27	(a)	1
28	(b)	1
29	(b) X ----> Y Z	1
30	(a) Slowly without stirring	1
31	(d)	1
32	(b)	1
33	(b)	1
34	Mass = Density x Volume = 7 x 33 = 231 g so, Range 0 – 250 gwt.	2
35	(a) more (b) upward	2
36	Arthropods - Jointed legs, chitinous plates, compound eye (any one)	2

Annelids - Segmented body, unjointed chitinous setae (any one) SECTION-A