
CBSE Sample Paper -05
SUMMATIVE ASSESSMENT –II
SCIENCE (Theory)
Class – IX

Time allowed: 3 hours

Maximum Marks: 90

General Instructions:

- a) All questions are compulsory.
- b) The question paper comprises of two sections, A and B. You are to attempt both the sections.
- c) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
- d) Questions 4 to 7 in section A are two marks questions. These are to be answered in about 30 words each.
- e) Questions 8 to 19 in section A are three marks questions. These are to be answered in about 50 words each.
- f) Questions 20 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
- g) Questions 25 to 42 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you

Section A

1. State the SI unit of buoyancy.
 2. Atomic number of an element is 12. What is its valency?
 3. Give two peculiar characteristics of sponges.
 4. Give four properties of sound waves.
 5. Find the electron distribution for the element that has atomic number 17 and write its valency.
 6. Write four main symptoms of jaundice or hepatitis.
 7. A ship sends ultrasound that returns from the sea bed and is detected after 3.42 s. If the speed of ultrasound through sea water is 1531 m/s, what is the distance of the sea bed from the ship?
 8. Why is it difficult to hold a school bag having strap made of thin and strong string?
 9. What are fluids? How does upthrust exerted by a fluid on an object immersed in it vary with density of fluid?
 10. An object of mass 15kg is moving with a uniform velocity of 4 ms^{-1} . What is the kinetic energy possessed by the object?
 11. Does the transfer of energy take place when you push a huge rock with all your might and fail to move it? Where is the energy you spend, going?
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12. Calculate the wavelength of a sound wave whose frequency is 220 Hz and speed is 440 m/s in a given medium.
 13. Compare the properties of electrons, proton and neutron.
 14. Calculate the number of Aluminum ions in 0.051 g of Al_2O_3 . [Atomic mass of Al = 27 u, O = 16 u $N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$]
 15. What are acute and chronic diseases? Which one of the two are more harmful and why? Give an example in support of your answer.
 16. Give an account of malaria giving its causative agent, symptoms and control measures.
 17. Sachin and Suhaas are friends and they study in the same class. Suhaas brings home made focod as lunch whereas Sachin eats Burger, chips and French fried during Lunch Break from school canteen. During a routine health check up in the school, Doctor finds Sachin overweight to his age. Both Sachin and Suhaas have read that Overweight leads to diabetes and Cardiovascular disease. Both of them now want to help other student so that no student could suffer from overweight.
 - a. What value is shown by Sachin and Suhaas?
 - b. What should Sachin do now to keep his weight under control?
 - c. How can two boys help other student?
 18. How do poriferan animals differ from coelenterate animals?
 19. The difference in the mass 100 moles each of sodium atoms and sodium ions is 5.48002 g. Compute the mass of an electron.
 20. What are causes, symptoms and methods of prevention and cure of AIDS?
 21. A light object and heavy object have same momentum. find out the ratio of their kinetic energies. which one has large kinetic energy?
 22. Four men lift a 250 kg box to a height of 1 m and hold it without raising or lowering it.
 - a. How much work is done by the man in lifting the box?
 - b. How much work do they do in just holding it?
 - c. Why do they get tired while holding it? ($g = 10 \text{ m/s}^2$)
 23. OTBA
 24. OTBA

Section B

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25. In a reaction, 5.3 g of sodium carbonate reacted with 6 g of ethanoic acid. The products were 2.2 g of carbon dioxide, 0.9 g water and some sodium ethanoate. What is the expected weight of sodium ethanoate?
26. Draw well labeled diagram of earthworm.
27. A metal cube weighs 80 g. The water level in the measuring cylinder, before and after immersing metal cube is shown below. What will be the density of cube?
28. Which of the following is correct according to law of conservation of mass?
- A. Volume of reactants = volume of products
 - B. number of reactants = number of products
 - C. mass of reactants = mass of products
 - D. total number of atoms on reactants side = total number of atoms on products side
29. When we react lead nitrate and sodium chloride to get lead chloride and sodium nitrate so as to prove law of conservation of mass, which of the following statement is correct?
- a. Mass of lead nitrate = mass of sodium chloride
 - b. Mass of lead nitrate + mass of sodium chloride = Mass of lead chloride + mass of sodium nitrate
 - c. Mass of lead chloride + mass of sodium chloride = Mass of lead nitrate + mass of sodium nitrate
 - d. Mass of sodium chloride + mass of sodium nitrate = Mass of lead chloride + mass of lead nitrate
30. Which of the following are monocots?
- a. Orchid, sugarcane, peas
 - b. Orchid, peas, bamboo
 - c. Peas, bamboo, sugarcane
 - d. Orchid, bamboo, sugarcane
31. Which acts as an anti-coagulant in female mosquitoes?
- a. Saliva
 - b. Gastric juice
 - c. Bile juice
 - d. Acetic acid
32. What do mosquitoes mostly use for senses?
- a. Antennae
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- b. Eggs
 - c. Nose
 - d. Mouth

33. Black dot-like structures seen in the underside of fern leaflets are:

- a. Seeds
- b. Sori
- c. Sporophylls
- d. Spores

34. The pressure exerted by the book due to thickness and front page on the ground are P_1 and P_2 respectively. Then,

- a. $P_1 = P_2$
- b. $P_2 = 2P_1$
- c. $P_1 = 2P_2$
- d. $P_1 > P_2$

35. Weight of an object in air is 300N. Its weight in water will be

- a. 300 N
- b. >300 N
- c. <300 N
- d. Zero

36. The object immersed in a fluid floats in it with its top surface at fluid surface. Which of the following will be true?

- a. The upthrust is greater than weight of the object
 - b. The upthrust is less than weight of the object
 - c. The upthrust is equal than weight of the object
 - d. None of the above
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Solution

1. Newton (N)
 2. Its valency is equal to 2 because its electronic configuration is 2,8,2 . It can lose 2 electrons to become stable like noble gases.
 3. (a) Presence of pores like ostia and osculum.
(b) Presence of Canal system.
 4. properties of sound waves:
 - a. These are longitudinal waves.
 - b. These are produced by vibrations.
 - c. These are mechanical waves.
 - d. Their speed is least in gases and maximum in solids.
 5. Electronic configuration is 2, 8, 7. Valency is equal to 1.
 6. Symptoms of jaundice: High temperature, headache, joint pains, loss of appetite, dark yellow urine and irritating rashes.
 7. $v = 1531 \text{ ms}^{-1}$, $t = 3.42 \text{ s}$
Since, $t = 2d / v$
 $d = vt/2 = 1531 \times 3.42 / 2 = 2618 \text{ m}$
 8. A thin and strong string has less surface area, due to which it exerts greater pressure on the shoulder of the person holding the bag using it. Thus, it becomes difficult.
 9. All liquids and gases are fluids.
Greater the density of the fluid, more is the upthrust.
Lesser the density of the fluid, lesser is the upthrust .
 10. $K.E = \frac{1}{2} mv^2 = \frac{1}{2} \times 15 \times (4)^2 = 120 \text{ J}$
 11. Yes, the energy is used up in causing muscular contraction and is dissipated in the form of heat also.
 12. $\text{wavelength } \lambda = \text{speed } v / \text{frequency } f = 440 / 220 = 2\text{m}$
 13. Electron:-
 - a. It is negatively charged.
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- b. Its absolute mass is equal to 9.1×10^{-31} kg

Proton:-

- a. It is positively charged.
- b. Its absolute mass is equal to 1.67×10^{-28} kg

Neutron:-

- a. It is neutral.
- b. Its mass is slightly more than that of protons. Its absolute mass is equal to 1.675×10^{-28} kg

14. Molecular weight of $\text{Al}_2\text{O}_3 = 2 \times 27 + 3 \times 16$

$$= 54 + 48 = 102 \text{ g mol}^{-1}$$

$$102 \text{ g of } \text{Al}_2\text{O}_3 \text{ contains } 2 \times 6.022 \times 10^{23}$$

$$0.051 \text{ g of } \text{Al}_2\text{O}_3 \text{ contains } = 2 \times 6.022 \times 10^{23} / 102 \times 51 / 1000$$

$$= 6.022 \times 10^{20} \text{ Al}^{3+} \text{ ions}$$

15. Acute disease lasts for only very short periods of time.

Chronic disease lasts for a long time, even as much as life time.

Chronic disease is more harmful because acute disease do not cause major effects on health while chronic diseases will do so. In case of chronic disease, it is likely to have prolonged general poor health with very drastic long term effects on people's health.

Example of chronic disease is tuberculosis of lungs, which causes ill for long period and does make to lose weight and feel tired all the time.

16. Malaria is a common disease in our country particularly in the rural areas.

Causes: It is caused by protozoan parasite, plasmodium which gets injected into the blood of a healthy person when bitten by an infected female Anopheles mosquito.

Symptoms: Headache, nausea and muscular pain.

High fever with shivering – this occurs periodically.

Control measures: Malaria can be controlled by a drug called quinine and its variations. Efforts are being made for antimalarial vaccine.

17. (a) Sachin should avoid junk food like burger, pizza, chips etc. immediately.

(b) Suhas and Sachin can do the following to help other students:

(i) They can request school authority to keep only healthy food in school canteen.

(ii) They can start a poster campaign in the school noticeboard highlighting the ill effect of junk food.

(c) the values shown by Suhas and Sachin are love for fellow people and concern for the society.

18. Poriferan Animals :

- a. They possess cellular level organization.
- b. The body has several pores, ostia and osculum.
- c. The body design of these animals involves minimal differentiation.
- d. Appendages are absent.
- e. Digestion is intracellular.
- f. Muscles and nerve cells are absent.

Coelenterate animals:

- a. They possess tissue level organization.
- b. The body has a single opening.
- c. The body design of these animals shows more differentiation.
- d. Appendages occur in the form of tentacles.
- e. Digestion is both intracellular and intercellular.
- f. Muscles and nerve cells appear for the first time in coelenterates.

19. $\text{Na} \longrightarrow \text{Na}^+ + \text{e}^-$

1 Mole 1 Mole 1 Mole

100 Moles 100 Moles 100 Moles

100 moles of electron weighs = 5.48002 g

$100 \times 6.022 \times 10^{23}$ electronic weighs = 5.48002 g

1 Electronic weighs = $5.48002 / (100 \times 6.022 \times 10^{23})$

= 0.91×10^{-25} g

= 9.1×10^{-26} g

= 9.1×10^{-29} kg

20. Causes: AIDS is caused by retro-virus HIV [Human Immuno Deficiency Virus]

Mode of transmission: AIDS is transmitted from an infected person to a healthy person through Sexual contact, blood transfusion, use of contaminated needle, infected mother to the foetus.

Symptoms: The major symptoms of AIDS are-

- (a) Swollen lymph nodes.
 - (b) Decreased Count of blood platelets causing haemorrhage and fever.
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(c) Sweating at night and weight loss.

(d) Severe damage to brain which may lead to loss of memory , ability to speak and think.

(e) Patient becomes susceptible to other infections due to breakdown of the immune system.

Prevention: AIDS can be prevented by adopting the following precautions:

(a) Sexual contact with unknown person should be avoided.

(b) Transfusion of infected blood should be avoided. The blood donor should be tested for HIV negative.

(c) Disposable syringes and needles should be used.

(d) Common razor at the barber shop should be avoided.

Cure: No effective treatment for AIDS is available.

21. $K.E. = \frac{1}{2} mv^2$

$$= \frac{1}{2} p^2/m, \text{ where } p=mv$$

When momentum is same, $(K.E.)_I / (K.E.)_H$

$$= m_h/m_I$$

Lighter mass will have larger kinetic energy.

22. (a) Work done in lifting = $mgh = 250 \times 10 \times 1 = 2500$ joule

(b) Work done is zero as displacement is zero.

(c) Muscular energy is used up in holding, so they get tired on just holding.

23. OTBA

24. OTBA

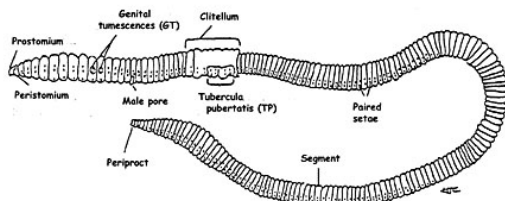
25. Mass of sodium carbonate + mass of ethanoic acid = mass of sodium ethanoate + mass of water + mass of carbon dioxide

$$5.3 \text{ g} + 6.0 \text{ g} = x + 0.9 + 2.2 \text{ g}$$

$$x = 11.3 - 3.1$$

$$= 8.2 \text{ g}$$

26. Diagram of earthworm



27. $V = 20 \text{ cm}^3$; $\rho = M/V = 80 \text{ g}/20\text{cm}^3 = 4 \text{ g/cm}^3$

28. C

29. B

30. D

31. A

32. C

33. B

34. D

35. C

36. A
