

**SUMMATIVE ASSESSMENT – II (2015-16)**

**SCIENCE**

**Class – IX**

**Time Allowed: 3 hours**

**Maximum Marks : 90**

**General Instructions:**

1. The question paper comprises of **three Sections A, B and C**. You are to attempt all the sections.
2. **All questions are compulsory.**
3. **All questions of Section-A, Section-B and Section-C are to be attempted separately.**
4. Question numbers **1 to 3 in Section-A are one mark** questions. These are to be answered in **one word** or in **one sentence** only.
5. Question numbers **4 to 5 in Sections-A are two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **6 to 16 in Section-A are three marks** questions. These are to be answered in about **50 words** each.
7. Question numbers **17 to 21 in Section-A are five marks** questions. These are to be answered in about **70 words** each.
8. **Section – B (Open Text Book Assessment)** has 3 questions. Question **22** is of **two marks**, Question **23** is of **three marks** and Question **24** is of **five marks**.
9. Question numbers **25 to 33 in Section-C** 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.
10. Question numbers **34 to 36 in Section-B** are questions based on practical skills are **two marks** questions.

SECTION-A

1. The chemical formula of chloride of an element X is  $\text{XCl}_3$ . Write the formula of its oxide. 1
2. What is the role of living organisms in the formation of soil? 1
3. What were the modifications introduced by Carl Woese in the classification proposed by Whittaker? 1
4. Name two sound waves inaudible to human beings. Give their range of frequencies. 2
5. State Archimedes' principle. Write its two applications. 2
6. What are the three conclusions drawn by Rutherford from the alpha particle scattering experiment? 3
7. (i) An atom of an element has seven electrons in the outermost M shell. Write its  
(a) Electronic configuration 3  
(b) Atomic number.  
(c) Valency  
(d) Name the element.  
(ii) Write the chemical formulae of the following compounds  
(a) Ammonium Sulphate (b) Magnesium hydroxide
8. (i) Calculate the formula unit mass of  $\text{K}_2\text{CO}_3$ .  
(Given atomic masses of K= 39u, C=12u, O=16u) 3  
(ii) What is the mass of 0.5 mole of  $\text{K}_2\text{CO}_3$ ?  
(iii) How many molecules of  $\text{K}_2\text{CO}_3$  are present in one mole?
9. (i) Differentiate between classes Pisces and Mammalia on the basis of :  
(a) Heart 3  
(b) Respiratory Organs  
(c) Reproduction  
(ii) A, B, C are living organisms. Identify the kingdom they belong to on the basis of the following features  
(a) A is unicellular, eukaryotic, microscopic, and show locomotion with the help of pseudopodia.  
(b) B is unicellular, microscopic, prokaryotic and has cell wall.  
(c) C is multicellular, filamentous, eukaryotic, autotrophic, and aquatic.



10. (i). What is greenhouse effect? How is carbon dioxide responsible for global warming? 3  
(ii). List two human activities that can increase carbon dioxide content in the air.
11. Draw and label Nitrogen cycle in nature. 3
12. (i) On which characteristics of a sound wave do the following properties depend : 3  
(a) Loudness  
(b) Pitch  
(ii) A man stands in between two high rise buildings and blows a whistle. He hears two successive echoes after 0.8seconds and 2.4 seconds. Calculate the distance between the buildings. [Speed of sound =330m/s]
13. (i) State and define the SI unit of work.  
(ii) In a tug of war, team A wins and team B loses. Which of these teams does 3  
(a) Positive work?  
(b) Negative work?  
Give reasons for your answer.
14. (i) Represent graphically 2 sound waves having same amplitude but different frequencies. 3  
(ii) A source of sound produces 20 compressions and 20 rarefactions in 0.2 seconds. The distance between a compression and the successive rarefaction is 50 cm . Find the wavelength and frequency of the wave.
15. (i) The potential energy of a freely falling body decreases progressively. Does this violate the law of conservation of energy? Why? 3  
(ii) A motor pump rated 400W operates for 2 min and 40 seconds and in doing so, raises 200 Kg of water to the top of a building. If  $g= 10\text{m/s}^2$ , calculate the height of the building.

16. Seema went to an opera house. She appreciated its architecture and furnishing. The curved ceiling, draperies, cushions and curtains were perfectly placed. She also saw a sound board behind the stage. She now wondered if each of these accessories were placed for the sake of aesthetics of the hall or had a scientific reason too. 3
- (a) What is the purpose of curtains, cushions and draperies in an opera house?
  - (b) How does the curved ceiling and sound board help?
  - (c) List some characteristic qualities of Seema.
17. (i) State the law of constant proportion. Explain the law by taking the example of water. Which postulate of Dalton's Atomic Theory explains this law? 5
- (ii) Draw the schematic atomic structure of sodium atom. ( $Z=11$ )
  - (iii) Isotopes have similar chemical properties. Give reason.
18. It was diagnosed that the body of a patient has lost its power of fighting any infection. 5
- (a) Name the disease he is suffering from.
  - (b) Which microbe is responsible for this disease?
  - (c) Write three ways of spreading this disease from one person to another.
19. (i) Who introduced the system of scientific naming of organisms? What are the conventions followed while writing scientific names? 5
- (ii) Name the phylum to which the following organisms belong:
    - (a) Ascaris
    - (b) Leech
    - (c) Sea urchin
    - (d) Liver fluke
    - (e) Sycon



20. (i) Derive an expression for kinetic energy of an object of mass  $m$  moving with a uniform velocity  $v$ .
- (ii) What happens to the kinetic energy of a body if its velocity is halved? 5
- (iii) A force acting on a 10 kg mass changes its velocity from 54km/h to 90km/h. Calculate the work done by the force.
21. (i) Define 1 watt of power.
- (ii) Express 1 kilowatt in terms of joule per second. 5
- (iii) Five bulbs each rated 100W are used for 4 hours, a heater rated 1500W is used for 2 hours and an electric iron rated 1000 W is used for 5 hours. Calculate the total energy consumed by them in terms of the commercial unit of energy. Convert the energy into Joules.

**SECTION-B (OTBA)**

(\*Please ensure that the open text of the given theme is supplied with this question paper)

**THEME- 2: Conservation of water bodies**

22. Mention some environmental factors and human activities leading to the 'death of our lifelines'. 2
23. Name some structures that had been constructed by our forefathers in the past to manage the available water resources then. Briefly describe the current status of these structures today. 3
24. (i) Do you think the responsibility of conserving our water resources lies solely on the shoulders of international organizations and governments? Justify your answer. 5
- (ii) Suggest some effective ways by which we can restore and conserve water.

## SECTION-C

25. While calculating the density of stone with the help of a spring balance and measuring cylinder, few air bubbles were seen sticking to stone when immersed in water. The presence of air bubbles will lead to the 1
- (a) Increase in density
  - (b) Decrease in density
  - (c) No change in density
  - (d) All of these occur simultaneously.

26. A sound wave strikes a wall perpendicularly. What is the angle of reflection of the sound wave? 1

(a)  $90^\circ$       (b)  $45^\circ$       (c)  $0^\circ$       (d)  $30^\circ$

27. A pulse was created in a slinky of length 4m by a group of 4 students. They observed that it returned , after reflection, at the point of creation 6 times in 10 seconds and calculated the speed as follows : 1

Student	A	B	C	D
Speed (m/s)	0.4	2.4	4.8	9.6

The correct speed is calculated by:

(a) A      (b) B      (c) C      (d) D

28. Barium chloride solution appears 1

- (a) blue
- (b) yellow
- (c) blue-green
- (d) colourless

29. What mass of silver nitrate will react with 5.85 g of sodium chloride to produce 14.35 g of silver chloride and 8.5 g of sodium nitrate? 1

(a) 22.85g      (b) 5.85g      (c) 17.00 g      (d) 8.5 g



30. The common name of Funaria is 1  
(a) Moss      (b) Alga      (c) Fern      (d) Mushroom
31. How many wings are present in cockroach? 1  
(a) 1 pair      (b) 2 pairs      (c) 3 pairs      (d) 4 pairs
32. The mosquito that spreads malaria is 1  
(a) Male Culex      (b) Female Anopheles      (c) Male Aedes      (d) Female Culex
33. Which one of the following has monocotyledonous seed? 1  
(a) Peas      (b) Rice      (c) Beans      (d) Mustard
34. A body is floating on the surface of a liquid. With the help of a diagram show the two forces acting on it that are responsible for its floatation. State the relationship between these two forces in this case. 2
35. (i) A body with dimensions  $1\text{cm} \times 2\text{cm} \times 3\text{cm}$  is placed in sand on 3 different surfaces. In which case the thrust exerted is more? Why? 2  
(ii) Give two examples where we increase the area of contact to decrease the pressure.
36. Name the group to which Dryopteris belong. Write two identifying features of the group. 2
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