



**DAV BORL PUBLIC SCHOOL, BINA**  
**CLASS: IX    SUBJECT: SCIENCE**  
**SAMPLE PAPER FOR SA- II SESSION (2015 –16)**

**Time period 3 hour**

**Maximum Marks : 90**

**General Instructions :**

1. The question paper comprises of **two Sections, A and B**. You are to attempt both the sections.
2. **All** questions are **compulsory**
3. **All** questions of **Section-A** and **all** questions of **Section-B** 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**
5. Question numbers **4 to 7** in **Sections-A** are **two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **8 to 19** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each
7. Question numbers **20 to 24** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
8. Question numbers **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. Name the anion and cation which constitute the molecule of magnesium oxide  | <b>1</b> |
| 2. Who proposed binomial nomenclature?   | <b>1</b> |
| 3. Why does a block of plastic released under water come up to the surface of water?   | <b>1</b> |
| 4. Name the plant group that includes naked seeded plant.. Name any two plants that belongs to that category.  | <b>2</b> |
| 5. Name the phylum in which organisms having metameric segmentations are placed. Give the scientific name of Earth worm.   | <b>2</b> |
| 6. Relative densities of two substances A and B are 2.5 and 0.9 respectively. Find densities of A and B. Also find whether they will sink or float in water. (Density of water =1000 kg/m <sup>3</sup> ) | <b>2</b> |
| 7. A certain household has consumed 250 units of energy during a month. How much energy is this in joules?   | <b>2</b> |

8. The percentage of three elements calcium, carbon and oxygen in a sample of calcium carbonate is given as : **3**  
 Calcium =40% ; Carbon =12.0% ; Oxygen = 48%  
 If the law of constant proportion is true, what weights of these elements will be present in 1.5 g of another sample of Calcium Carbonate?  
 (Atomic mass of Ca = 40 u, C = 12 u, O = 16 u)
9. Which of the following are isotopes and which are isobars? **3**  
 Argon, Protium, Calcium, Deuterium. Explain why the isotopes have similar chemical properties but they differ in physical properties?
10. The description of atomic particles of two elements X and Y is given below **3**
- |           | X | Y |
|-----------|---|---|
| Protons   | 8 | 8 |
| Neutrons  | 8 | 9 |
| Electrons | 8 | 8 |
- (i) What is the atomic number of Y?  
 (ii) What is the mass number of X?  
 (iii) What is the relation between X and Y?  
 (iv) Which element/elements do they represent?  
 (v) Write the electronic configuration of X?  
 (vi) Write the cation/anion formed by the element
11. Write down general features of organism belonging to Arthropoda and give two examples of it. **3**
12. What are the two general classes of Angiosperms ? Give two examples of each. **3**
13. Name the phylum in which organisms having metameric segmentations are placed. Give the scientific name of Earth worm. **3**
14. State the meaning of one Pascal. A boy of mass 40 kg standing on loose sand. If the area of his feet is 0.04 m<sup>2</sup>. Calculate the pressure exerted by the boy on the sand. (g=10 m/s<sup>2</sup>) **3**
15. State the factors on which work done depends. **3**  
 Write the work done in following activities is positive or negative or zero. Also give reasons why positive or negative or zero work done.
- In a tug of war work done by winning team and losing team
  - Work done by the force of gravity on box lying on the roof of bus moving with constant velocity on a straight road
16. Joule/sec is unit of which physical quantity? Define 1 watt. **3**  
 How much water per minute the pump of power 2 kW can raise to a height of 10m?  
 (g=10 m/s<sup>2</sup>)
17. a) What is sound and how is it produced? **3**  
 b) How does the sound produced by a vibrating object in a medium reach your ear?  
 c) Why is sound wave called a longitudinal wave?
18. Suggest three steps that you will undertake to maintain environmental hygiene. **3**
19. Draw C- Cycle. **3**
- (i) Define mole **5**

20. (ii) How is it related to Avogadro constant, relative mass and molecular mass?  
 (iii) What is the number of molecules in 0.25 moles of oxygen? Avogadro's no. ( $6.22 \times 10^{23}$ ).

Or

- (i) Define atomicity  
 (ii) Give an example each of a polyatomic element and a polyatomic ion.  
 (iii) How many atoms are present in  $\text{CaCl}_2$  molecule and  $\text{SO}_4^{2-}$  ion?  
 (iv) Write down the formulae of  
 (a) sodium carbonate  
 (b) Ammonium chloride  
 (c) Zinc oxide  
 (d) Aluminium hydroxide
21. Compare the (i) heart (ii) respiratory organs of various classes of vertebrates **5**
22. Describe how green house effect may cause atmospheric heating. Name any two atmospheric constituents responsible for this. **5**
23. (a) What is transformation of energy? Explain with any two suitable examples and also explain conservation of energy in it. **5**  
 (b) What must be the velocity of a moving body of mass 2 kg so that its K.E. is 25J?  
 (c) The potential energy of a freely falling object decreases progressively. Does this violate the law of conservation of energy? Why? A freely falling object eventually stops on reaching the ground. What happens to its kinetic energy?
24. (a) A ball is dropped into a pond from a height of 44.1m. The splash of sound is heard 3.13 second after the ball is dropped. Determine the velocity of sound in air. **5**  
 (b) A boy standing at some distance from a cliff claps his hands and heard an echo 0.8 later. What is the distance of the cliff from the boy if speed is 340 m/s  
 (c) What does SONAR stands for?  
 What is the audible range of the average human ear?

### SECTION B

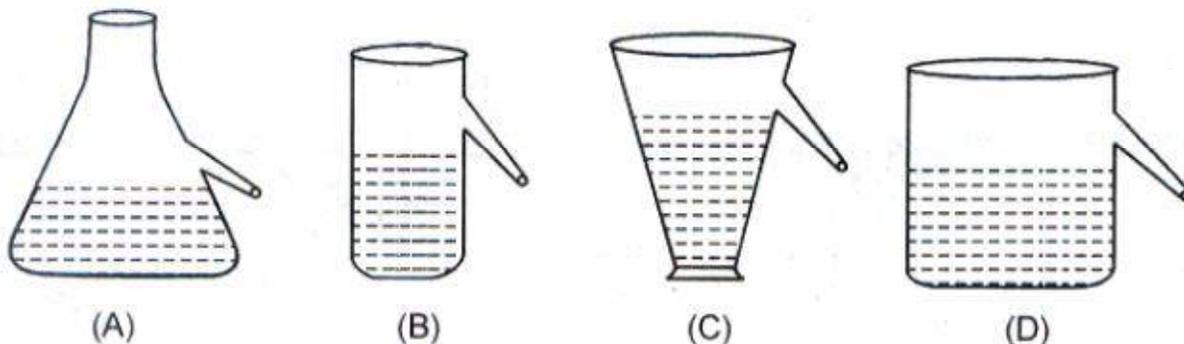
25. Four students A, B, C and D verified the law of conservation of mass in the chemical reaction of Barium Chloride and Sodium sulphate. All of them took 107.2 Barium chloride solution and 116.1g of sodium sulphate solution and mixed them in a beaker of mass 150g. They reported their results as follows : **1**

Student	Colour of reaction mixture after mixing	Mass of reaction mixture in the beaker including the mass of beaker
A	White precipitate	383.3g
B	Brown precipitate	393.3g
C	White precipitate	373.3g
D	Brown precipitate	363.3g

The correct observation is that of student

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

26. Four students A, H, C and D while performing an experiment on establishing the relation between the loss of weight of a small solid when fully immersed in tap water, and the weight of water displaced by it, used four different shapes of overflow cans containing water as shown. 1



- The arrangement, that would give correct results, is that of student:
- (a) A (b) B (c) C (d) D
27. The least count of a spring balance is 1 g wt. When it is suspended freely without any weight attached to the hook, the pointer is just in front of second small division on the scale. The zero error is 1  
(a) -2 g wt (b) +2 g wt (c) Zero (d) +1 g wt
28. A student lowers a body in a liquid filled in a container. He finds that there is a maximum apparent loss in weight of the body when 1  
(a) It just touches the surface of the liquid.  
(b) It is completely immersed in the liquid.  
(c) It is partially immersed in the liquid.  
(d) It is partially immersed and also touches the sides of the container.
29. While taking readings on the spring balance what are the things you should take into account? 1  
a) Zero error (b) Least count  
c) Both (a) and (b) (d) None of these
30. A student while verifying laws of reflection of sound measured the angle between the incident sound wave and reflected sound wave as  $110^\circ$ . The angle of reflection is 1  
(a) 110 (b) 55 (c) 27 (d) 0
31. The wavelength of sound wave was measured by student as 8m. The frequency of sound wave is given as 40 Hz. The speed of sound as calculated by the student is 1  
(a) 40 m/s (b) 8 m/s (c) 5 m/s (d) 320 m/s
32. While conducting the experiment to verify the law of conservation of mass, Why is barium chloride solution kept separated in small ignition tube? 1
33. The wave produced in the interior of the earth is called : 1  
a) Longitudinal (b) Seismic wave (c) Sound wave (d) Transverse wave
34. Insects and Mites belong to which phylum 1  
Porifera (b) Arthropoda (c) Mollusca (d) None of these
35. On which of the following factors does the speed of propagation of a pulse in a slinky not depend upon? 1  
(a) Dimensions of slinky  
(b) Material of slinky

- (c) Room temperature
- (d) Length of the slinky

36. You are given a sphere of radius 2 cm which is made of an alloy of density 8000 kg/m<sup>3</sup>. If in your school laboratory spring balances of following specifications are available, which one would you select to determine the weight of given sphere most accurately **1**
- a) Range (0-100) gwt                      Least count 1.0 gwt
  - b) Range (0-250) gwt                      Least count 2.5 gwt
  - c) Range (0-500) gwt                      Least count 2.5 gwt
  - d) Range (0-1000) gwt                      Least count 5.0 gwt
37. Five kingdom classification is proposed by **1**
- a) Linnaeus    b) Darwin    c) Mendel    d) Whittaker
38. Basic unit of classification is **1**
- a) Class                      b) Species    c) Genus    d) Kingdom
39. Bacteria and Cyanobacteria are included in **1**
- a) Fungi                      b) Plantae    c) Monera    d) Protista
40. The top most category in the taxonomic hierarchy is **1**
- a) Class                      b) Species    c) Genus    d) Kingdom
41. Sponges are member of which kingdom **1**
- a) Animalia    b) Plantae    c) Monera    d) Fungi
42. Pneumatic bones are present in which class **1**
- a) Aves                      b) Amphibians    c) Reptiles    d) None