

**CBSE  
Class IX Science  
Sample Paper – 9**

**Time: 3 hrs****Total Marks: 80****General Instructions:**

- The question paper comprises five sections – A, B, C, D and E. You are to attempt all the sections.
- All questions are compulsory.
- Internal choice is given in sections B, C, D and E.
- Question numbers 1 and 2 in Section A are one mark questions. They are to be answered in one word or in one sentence.
- Question numbers 3 to 5 in Section B are two marks questions. These are to be answered in about 30 words each.
- Question numbers 6 to 15 in Section C are three marks questions. These are to be answered in about 50 words each.
- Question numbers 16 to 21 in Section D are five marks questions. These are to be answered in about 70 words each.
- Question numbers 22 to 27 in Section E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

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**Section A**

1. What is leghaemoglobin? (1)
2. Name one macronutrient and micronutrient which plants absorb from the soil. (1)

**Section B**

3. Explain the atomicity shown by noble gases. (2)

**OR**

Write the chemical formulae of the following compounds:

- i. Ammonium sulphate
- ii. Magnesium carbonate

4. If 10 sound waves are produced per second, what is the time period in seconds? (2)
5. Why are branches of a tree able to move and bend freely despite high winds? (2)

**Section C**

6. Name the following: (3)
- (a) Cell organelle which permits selective entry and exit of materials in cells.
  - (b) Solution in which solute concentration is more than that inside the cell.
  - (c) Fibrous polysaccharide which constitutes the cell wall.

7. Draw a diagram of *Hydra* and label the following parts: (3)
- Tentacles, stinging cells, gastrovascular cavity, epidermis

**OR**

List in the tabular form three distinguishing features of gymnosperms and angiosperms.

8. A man throws a ball weighing 400 g in the upward direction: (3)
- i) What will be its initial momentum?
  - ii) What will be its momentum at the highest point of its flight?

**OR**

A girl of mass 40 kg jumps with a horizontal velocity of  $5 \text{ ms}^{-1}$  onto a stationary cart with frictionless wheels. The mass of the cart is 3 kg. What is her velocity as the cart starts moving? (3)

9. Explain why an alloy is considered a mixture. (3)

10. List some factors for which variety improvement is performed in crops. (3)

11. Give reasons: (3)
- (a) *Echidna* and *Platypus* lay eggs but are still considered mammals.
  - (b) Crocodile has a four-chambered heart but is still a reptile.
  - (c) Birds have pneumatic bones.

12. Which has lesser number of atoms and moles, 50 g of iron or 50 g of sodium? (3)

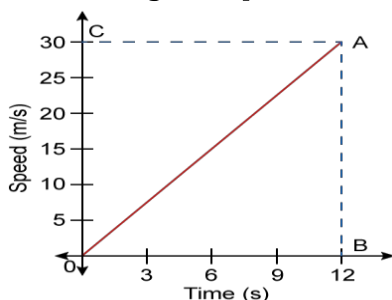
**OR**

A 0.24 g sample of a compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight.

13. (3)
- Differentiate between evaporation and boiling.
  - List the factors which affect the rate of evaporation and explain their effect on it.

14. Why is it said that a man carrying a suitcase is not doing any work with respect to gravity? (3)

15. Answer the following questions from the given speed–time graph: (3)



- What type of motion is represented by OA?
- Find the acceleration of the body.
- What is the distance travelled in 12 seconds?

### Section D

16. (5)
- List the postulates of Thomson's model of an atom.
  - What are the properties of electrons?

**OR**

The atomic number of chlorine is 17 and its mass number is 35.

- What is the electronic configuration of a negatively charged chlorine ion,  $\text{Cl}^-$ ?
- What is the atomic number and mass number of  $\text{Cl}^-$ ?
- Define valency, and calculate the valency of  $\text{Cl}^-$ .

17. (5)
- Describe the oxygen cycle with the help of a diagram.
  - How does depletion of the ozone layer take place?

**OR**

- What are the consequences of global warming?
- Draw a labelled diagram to show the water cycle in nature.
- Why is water essential for life?

- 18.** (5)
- (i) A box is pulled across a floor by applying a force of 36 N at an angle of  $45^\circ$  above the horizontal. How much work is done by applying force in pulling the box to a distance of 30 m? (given:  $\sqrt{2} = 1.414$ )
- (ii) What happens to an inflated balloon whose mouth is untied and is released from the right side?

- 19.** (5)
- (i) Define acceleration. Write the expression for it.
- (ii) A bus increases its speed from 10 m/s to 30 m/s in 15 seconds. What is its acceleration?
- (iii) What is positive and negative acceleration?

**OR**

A cyclist goes around a semi-circular track in 50 seconds. If the radius of the track is 150 metres, calculate his speed. Also calculate the acceleration of the cycle if he starts from rest.

- 20.** Pragma tested the solubility of three substances at different temperatures and collected the data as given below (results are given in the following table, as grams of substance dissolved in 100 grams of water to form a saturated solution). (5)

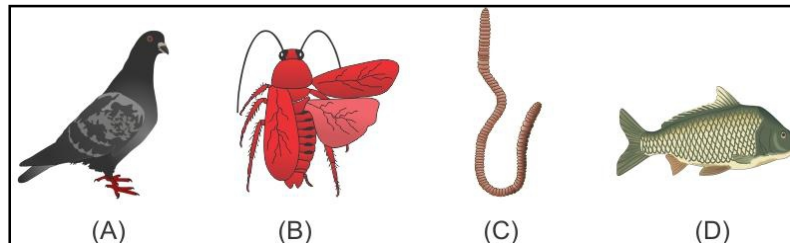
Substance dissolved	Temperature (in K)				
	283	293	313	333	353
Potassium nitrate	21	32	62	106	167
Sodium chloride	36	36	36	37	37
Potassium chloride	35	35	40	46	54
Ammonium chloride	24	37	41	55	66

- (a) What mass of potassium nitrate would be needed to produce a saturated solution of potassium nitrate in 50 grams of water at 313 K?
- (b) Pragma makes a saturated solution of potassium chloride in water at 353 K and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain.
- (c) Find the solubility of each salt at 293 K. Which salt has the highest solubility at this temperature?
- (d) What is the effect of change of temperature on the solubility of a salt?

21. Prerna came to school one day with a running nose and reddish and watery eyes. She also kept coughing. She met Vidhi during the morning assembly who advised her to sit at a separate desk in the classroom till she recovers. (5)
- Name the disease which Prerna is suffering from.
  - Name the causal organism.
  - List any two preventive measures for the disease.
  - What is your viewpoint on Vidhi's advice?

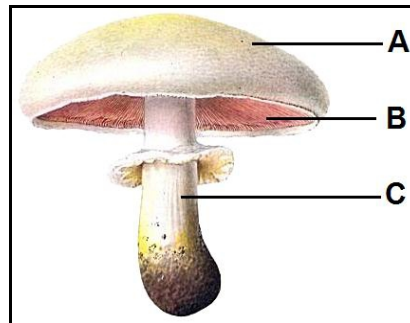
### Section E

22. Observe the figure carefully. (2)



- Which of these organisms belong to Phylum Arthropoda?
- Write any two striking features of Phylum Arthropoda.

23. Observe the figure carefully. (2)



- Identify the given specimen and the kingdom to which it belongs.
- Label A, B and C.

**OR**

The teacher had shown Kriya a specimen R and asked her to find out if it is *Spirogyra*.

- List any two features which will help Kriya to identify *Spirogyra*.
  - How does *Spirogyra* store food?
24. State the correct method of separation for the following:
- Mixture of nitre and common salt
  - Mixture of camphor and salt
  - Mixture of alcohol and water
  - Cream from milk

**OR**

What happens when barium chloride and sodium sulphate solutions are mixed? Give the chemical reaction.

**25.** When 3.0 g of carbon is burnt in 8.0 g of oxygen, 11.0 g of  $\text{CO}_2$  is formed.

What mass of carbon dioxide will be formed when 3.0 g of carbon is burnt in 50.0 g of oxygen? (2)

**26.** Consider a person sitting in a room adjacent to the school auditorium. The person can only listen to the musicians but cannot see them. He can also differentiate between the sound produced by a sitar and a guitar. Which characteristic of sound helps him to do so? (2)

**OR**

Why are soft and porous-like materials used in theatres and concert halls?

**27.** A volume of solid of mass 2 kg is  $500\text{cm}^3$ . Find the density of the solid. (2)