

Goa Board
Class IX Science
Term 2
Sample Paper – 4

Time: 3 hrs

Total Marks: 90

General Instructions:

1. The question paper comprises of two sections, A and B. You are to attempt both the sections. All questions are compulsory.
 2. All questions of **Section A** and all questions of **Section B** are to be attempted separately.
 3. Question numbers **1 to 3** in **Section A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
 4. Question numbers **4 to 6** in **Section A** are **two marks** questions. These are to be answered in about **30 words** each.
 5. Question numbers **7 to 18** in **Section A** are **three marks** questions. These are to be answered in about **50 words** each.
 6. Question numbers **19 to 24** in **Section A** are **five marks** questions. These are to be answered in about **70 words** each.
 7. Question numbers **25 to 33** 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.
 8. Question numbers **34 to 36** in **Section B** are questions based on practical skills and are **two marks** questions.
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SECTION A
Attempt all questions from this section.

1. A blacksmith uses a heavy hammer and raises it to a height before striking the chisel. Why? [1]
2. Give two examples of polyatomic ions? [1]
3. Define communicable diseases. [1]
4. An engine pumps 40 kg of water per second. If water comes out with a velocity of 3m/s, what is the power of the engine? [2]
5. (a) How do gymnosperms and angiosperms differ from each other?
(b) Name the largest phylum which is probably the largest group of animals? [2]

6. Explain the drawbacks of the Rutherford's model of an atom. [2]
7. Draw a diagram to show the cycling of nitrogen in the environment. [3]
8. [3]
(a) Distinguish between longitudinal waves and transverse waves. Give one example of each.
(b) Write two important applications of ultrasound waves.
9. [3]
(a) Define soil erosion.
(b) Explain the formation of soil.
10. [3]
(a) Define potential energy and give few examples of objects possessing potential energy.
(b) What is gravitational potential energy? On what does the change in the potential energy of an object between two given points depend?
11. [3]
(a) A ship sends out ultrasound produced by a transmitter which returns from the sea bed and is detected after 3.42 s. If the speed of the ultrasound waves through sea water is 1530 ms^{-1} , what is the distance of the sea bed from the ship?
(b) What is SONAR?
12. Define 1 joule of work. What is the relation between joule and erg? [3]
13. A wave pulse on a string moves a distance of 8 m in 0.05 s. [3]
(a) Find the velocity of the pulse.
(b) What would be the wavelength of the wave on the same string if its frequency is 200 Hz?
14. Rekha was quite confused when she was taught mole concept in the class. The same evening she went to the market with her father to buy fruits. Her father bought one dozen apples, one dozen oranges and one dozen bananas. (One dozen = 12 pieces) The fruit seller gave the fruits according to their mass in kg. On observing their respective masses, Rekha understood the mole concept instantly. [3]
i. Can you explain what made Rekha understand mole concept?
ii. What is Avogadro's constant?
iii. Define formula unit mass. How to determine the formula unit mass?

15. If 1g of sulphur dioxide contains x molecules, what will be the number of molecules in 1 g of methane? ($S = 32 \text{ u}$, $O = 16 \text{ u}$, $C = 12 \text{ u}$, $H = 1\text{u}$) [3]

16. [3]

- (a) Discuss any two advantages of binomial nomenclature.
- (b) Write two points of differences between Amphibians and Aves.

17. [3]

- (a) What are the causes of non-infectious diseases?
- (b) Write the causative agents for the following diseases:
 - i. Tuberculosis
 - ii. Jaundice
 - iii. Malaria
 - iv. Polio

18. Mention the characteristic feature of phylum Echinodermata? [3]

19. [5]

- (a) Under which of the following conditions is a person most likely to fall sick?
 - i. When she is recovering from malaria.
 - ii. When she has recovered from malaria and is taking care of someone suffering from chicken pox.
 - iii. When she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken-pox. Why?
- (b) Why antibiotics do not work against viruses?

20. [5]

- (a) What is the amount of work done:
 - i. by an electron revolving in a circular orbit of radius ' r ' around a nucleus?
 - ii. by an electron moving with half the speed of light in empty space free of all forces?
- (b) An electronic pump is used to pump water from an underground sump to the overhead tank, situated 20 m above. It transfers 2000 kg of water to the overhead tank in 15 minutes. Calculate the power of the pump.
- (c) What do you mean by instantaneous power of a device?

21. What are the characteristics of sound? Discuss each one of them briefly. [5]

22.

[5]

- (a) How is the valency of an atom related to its electronic configuration?
(b) The composition of the nuclei of two atomic species A and B is given below:

A	B
Protons = 6	Protons = 6
Neutrons = 6	Neutrons = 8

Calculate the mass numbers of A and B. What is the relation between the two species and which element or elements do they represent?

23."Urbanisation and industrialisation are mainly responsible for the increase in environmental pollution". Justify this statement and suggest ways and means to keep it in check. [5]

24.

[5]

- (a) Give any three differences between bony and cartilaginous fish.
(b) What are cold blooded animals?
(c) Name the excretory organs of:
i. Sponges
ii. Annelids

SECTION B

25. In an experiment to verify the laws of reflection of sound, the angle between one pipe and the normal is θ . The perfect reflection takes place only when: [1]

- (a) The angle between two pipes is 2θ .
- (b) The angle between the two pipes is 90° .
- (c) The angle is anywhere between θ and 90° .
- (d) The angle between both the pipes is $\theta/2$.

26. There are three spring balances A, B and C with least count 2 gm, 0.2 gm and 1 gm respectively. The mass of an object of 6.6 gm has to be measured using any of the 3 balances. Which of the above can be chosen for accurate measurement? [1]

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

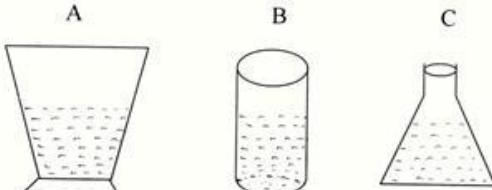
27. The mass of a solid object in air is 140 g while its mass when fully immersed in water is 105 g. Which of the following statement is correct about the object? [1]

- (a) The volume of the object is 105 cm^3 .
- (b) The density of the object is 4 g/cm^3 .
- (c) The buoyant force acting on the object in water is 105 N.
- (d) The density of the object is 0.25 g/cm^3 .

28. If we want to determine the volume of a solid by immersing it in water, the solid should be: [1]

- (a) Lighter than water
- (b) Heavier than water
- (c) Insoluble in water
- (d) Heavier than water and insoluble in it

29. A given solid is weighed in the air using a spring balance. It is then weighed by immersing it fully in each of the three vessels containing water as shown in the figure below. Its weight when immersed will be: [1]



- (a) Least in vessel C
- (b) Least in vessel A
- (c) Least in vessel B
- (d) Equal in all three vessels

30. In which of the following mediums, will the sound waves travel faster? [1]

- (a) Air
- (b) Vacuum
- (c) Water
- (d) Steel

31. Rajiv found out the role of spiracle in a cockroach correctly as: [1]

- (a) Excretion
- (b) Circulation
- (c) Respiration
- (d) Movement

32. Which of the following reagents is used in the experiment to verify the law of conservation of mass along with sodium sulphate? [1]

- (a) Barium chloride
- (b) Barium sulphate
- (c) Barium nitrate
- (d) Sodium chloride

33. Which of the following organism is not a triploblastic? [1]

- (a) Jellyfish
- (b) Tapeworm
- (c) Liverfluke
- (d) Roundworm

34. [2]

- (a) During the experiment of reflection of sound, if we cover the reflecting surface with a curtain, then the reflected sound will
 - (A) Not be heard at all
 - (B) Be louder
 - (C) Be less loud
 - (D) Be same
- (b) Give an explanation for the above observation.

35. Give an example to show that the Law of conservation of mass applies to physical change. [2]

36. The given figure is that of a:

[2]



- (a) Ulothrix
- (b) Spirogyra
- (c) Chlamydomonas
- (d) Cladophora