CBSE
Class IX Science

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.

## SECTION A
Attempt all questions from this section.

1. Give one example where kinetic energy is transferred from one object to another.   [1]

2. What are polyatomic ions?   [1]

3. What are the different states in which water is found during the water cycle?   [1]

4. Flash and thunder are produced simultaneously. Yet, thunder is heard a few seconds after the flash is seen, why? How does the speed of sound in air vary with the rise in the density of the medium?   [2]

5. Explain the term variable valency with the help of two examples. [2]

6. Write two points of differences between gymnosperms and angiosperms. [2]

7. [3]

(a) Draw a diagram depicting low pitched sound and high pitched sound.

(b) When a person uses deodorant spray, the other person standing at a distance would hear the sound of spraying first and the fragrance of the spray would reach him later. Why so?

8. [3]

(a) An object 'P' of mass 'm' is lifted from a point A on the ground to point B at a height 'h' above the earth by Rina and Mita, but the path taken by both of them for doing it is different (as shown in fig. I and II). Calculate the work done in both the situations.
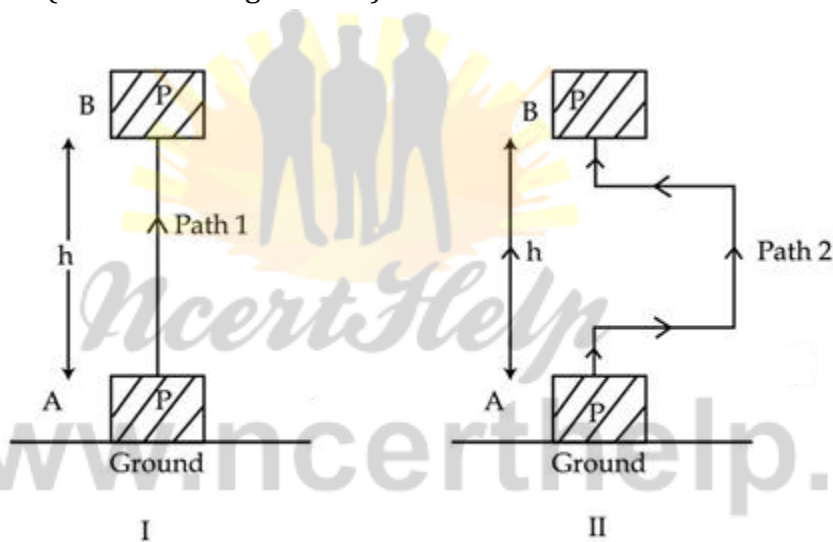
(b) In the above given cases, which force is doing positive work and which one is doing negative work?

9. What is SONAR? For what is it used? Explain its working in brief. [3]

10. Define work. Under what conditions, work is said to be done by a force on an object?

[3]

11. State three conditions necessary for hearing sound. [3]

12. Calculate the number of molecules of sulphur present in 16 g of solid sulphur. [3]

13.

(a) If an element 'M' has mass number 27 and atomic number 13, how many protons and neutrons does its atom contain? What valency will be shown by M?

(b) Write the electronic configuration of an atom with atomic number 6. [3]

14. Write a short note on greenhouse effect. [3]

15. Give two examples of each of the following: [3]
    (a) Diseases which spread through air.
    (b) Diseases which spread through water.
    (c) Diseases which spread through insects.

16. What precautions can you take in your school to reduce the incidence of infectious diseases? Mention any three points. [3]

17. [3]
    (a) List any two benefits of classification.
    (b) Why bryophytes and pteridophytes grow in moist and shady places?

18. What are the effects of air pollution on human beings? [3]

19. [5]
    (a) Define kinetic energy. Give examples.
    (b) Obtain an expression for the kinetic energy of an object of mass 'm' and possessing a velocity 'v'.

20. Draw a labeled diagram of auditory parts of the human ear and explain how the human ear works. [5]

21. Define electrovalency and covalency. Describe the formation of a covalent bond with the help of an example. [5]

22. [5]
    (a) Describe oxygen cycle with the help of a diagram.
    (b) How does depletion of the ozone layer take place?

23. [5]
    (a) Define the following terms:
        i. Lichens
        ii. Cryptogamae
        iii. Phanerogams
    (b) Why whales are not grouped in fishes?
    (c) What is bilateral symmetry?

24. [5]
    (a) How cholera is spread through water?
    (b) What is an antibiotic? Give one example

SECTION B

25. Reverberation produced in large auditoriums is due to: [1]
    (a) Reflection of sound by windows.
    (b) Absorption of sound by walls.
    (c) Reflection of sound by walls and ceiling.
    (d) Absorption of sound by floor.

26. Water meniscus in a graduated cylinder is of concave shape. While finding the volume, the correct reading will correspond to: [1]
    (a) The upper end of the meniscus
    (b) The lower end of the meniscus
    (c) The midpoint of the meniscus
    (d) Anywhere on the meniscus

27. While determining the density of the material of a sphere using a spring balance and a measuring cylinder, a student noted the following readings: [1]
    i.   Mass of the sphere = 81 g
    ii. Reading of water level in the cylinder without the sphere in it = 54 ml
    iii. Reading of water level in the cylinder with the sphere in it = 63 ml
    On the basis of these observations, the density of the material of the sphere is:
    (a) 1500 kg m^{-3}
    (b) 6000 kg m^{-3}
    (c) 7000 kg m^{-3}
    (d) 9000 kg m^{-3}

28. A student lowers a solid in a container filled with a liquid. He finds that there is maximum apparent loss in the weight of the solid 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. An object exerts a force 'F' on a surface of surface area 'A'. The pressure 'P' acting on the surface is given by: [1]
    (a) $P = F/A$
    (b) $P = A/F$
    (c) $P = FA$
    (d) $P = F/A^2$

30. In the experiment of verification of reflection of sound, the incident sound is directed along: [1]
   (a) The axis of the tube.
   (b) The normal to the axis of the tube.
   (c) an angle of 30º from the axis of the tube.
   (d) an angle of 45º from the axis of the tube.

31. In the figure of the earthworm given below, the horizontal lines throughout the body represent the: [1]

   (a) Cells of the body.
   (b) Cell walls separating the cells of the body.
   (c) Vertically arranged muscles of the body.
   (d) Septa separating the segments of the body

32. The characteristic features to identify a nerve cell are: [1]
   (a) Round or oval cells with a blobbed nucleus and cytoplasmic granules.
   (b) Cell body with branched cytoplasmic extensions at one end and a long projection at the other end.
   (c) Spindle shaped cell with a big central nucleus.
   (d) Red colored, biconcave disc shaped enucleated cells.

33. According to the law of conservation of mass, mass of reactants will be equal to the mass of: [1]
   (a) Products
   (b) Catalysts
   (c) Gases evolved
   (d) Apparatus used for reaction

34. The feature which places them in the same phylum is: [2]
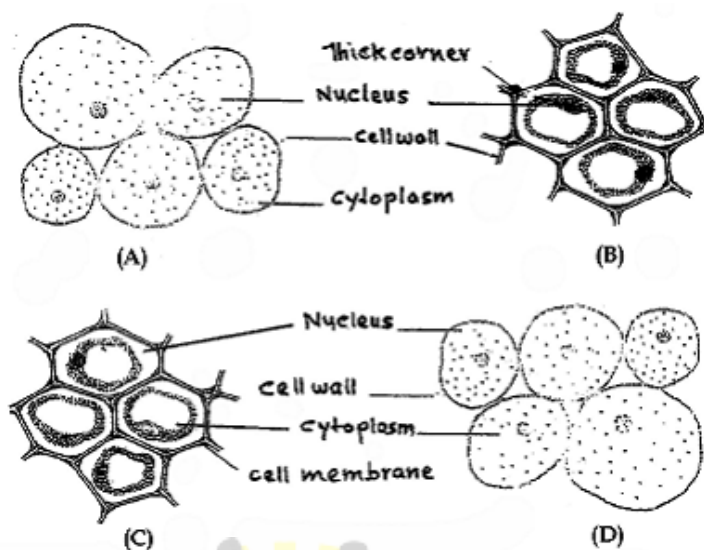
(a) Pointed head
(b) Bulky thorax
(c) Presence of scales
(d) Post anal tail

35. 6.4 g of $MgCO_3$ on heating gave 2.88 g of MgO and 3.52 g of CO_2. What will be the total mass of the products? Which law of chemical combination will govern your answer? Which law of chemical combination governs this? Explain the law. [2]

36. A student while verifying the laws of reflection of sound measured the angle between the incident sound wave and the reflected sound wave as $110°$. What will be the angle of reflection? State the law of reflection of sound which was used to obtain the angle of reflection. [2]