

**Class - IX**  
**कक्षा - IX**  
**SCIENCE**  
**विज्ञान**

Time : 3 to 3½ hours

समय : 3 से 3½ घंटे

Maximum Marks : 80

अधिकतम अंक : 80

Total No. of Pages : 11

कुल पृष्ठों की संख्या : 11

**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. There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. Only one option in such question is to be attempted.
4. All questions of section A and all questions of section B are to be attempted separately.
5. Question numbers **1 to 4** in section A are one mark questions. These are to be answered in **one word or one sentence**.
6. Question numbers **5 to 13** are two mark questions, to be answered in about **30 words**.
7. Question numbers **14 to 22** are three mark questions, to be answered in about **50 words**.
8. Question numbers **23 to 25** are five mark questions, to be answered in about **70 words**.
9. Question numbers **26 to 41** in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to choose one most appropriate response out of the four provided to you.
10. An additional 15 minutes time has been allotted to read this question paper only. During this interval you are not to write any thing on the answer book.

**सामान्य निर्देश :**

1. प्रश्न-पत्र दो भागों में बँटा है, **अ** तथा **ब** में, आपको दोनों भाग करने हैं।
2. सभी प्रश्न **अनिवार्य** हैं।
3. कुल मिलाकर कोई चयन नहीं है। यद्यपि पाँच अंकों की श्रेणी में तीनों प्रश्नों में आन्तरिक चयन दिया गया है। इन सभी प्रश्नों में केवल एक विकल्प हल करना है।
4. सभी प्रश्न भाग **अ** और सभी प्रश्न भाग **ब** के अलग-अलग हल करने हैं।
5. प्रश्न संख्या **1** से **4** एक अंक के प्रश्न हैं। इनका उत्तर **एक शब्द** या **एक वाक्य** में दीजिए।
6. प्रश्न संख्या **5** से **13** दो अंक के प्रश्न हैं, इनका उत्तर लगभग **30 शब्दों** में दीजिए।
7. प्रश्न संख्या **14** से **22** तीन अंक के प्रश्न हैं, इनका उत्तर लगभग **50 शब्दों** में दीजिए।
8. प्रश्न संख्या **23** से **25** पाँच अंक के प्रश्न हैं, इनका उत्तर लगभग **70 शब्दों** में दीजिए।
9. प्रश्न संख्या **26** से **41** बहुविकल्पी प्रश्न हैं जो प्रयोगात्मक कौशल पर आधारित हैं। प्रत्येक प्रश्न एक अंक का है। आपको दिए गए चार विकल्पों में से सबसे उपयुक्त एक विकल्प छाँटना है।
10. इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। इस अवधि के दौरान आप केवल प्रश्न-पत्र को पढ़ेंगे और उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।

## SECTION - A

1. A man holding a bucket of water on his head stands stationary. Is he doing any work ? Give reason.
2. Name the type of energy possessed by the following:  
(i) Stretched slinky      (ii) speeding car
3. Name any two water pollutants.
4. Give two causes of soil erosion.
5. If relative density of aluminium is 2.7 and density of water is  $1000 \text{ kg/m}^3$ . What is the density of aluminium in SI unit ?
6. (a) Explain why wide sleepers are placed below railway lines ?  
(b) When we jump into a swimming pool we feel lighter. Why ?
7. Represent graphically two sound waves having same amplitude but different frequencies.
8. Name two measures that can be taken to reduce water pollution.
9. Suggest two methods to control air pollution.
10. An atom of an element has one electron in the outermost M shell. State its:  
(a) Electronic configuration  
(b) Number of protons  
(c) Atomic number  
(d) Valency of this element
11. (a) What is molar mass ?  
(b) Calculate the molar mass of carbon dioxide gas.
12. Why is there a need for classification and systematic naming of living organisms ?
13. How do reptiles differ from amphibians ?
14. (a) Why do we hear sound produced by the humming bees while the sound of vibrations of pendulum is not heard ?  
(b) Give any two applications of Ultrasound.

15. A 5 kg ball is thrown upwards with a speed of 10m/s. (take  $g = 10 \text{ m/s}^2$ )
- Calculate the maximum height attained by it.
  - Find the potential energy when it reaches the highest point.
16. (a) Why we cannot hear an echo in a small room ?
- (b) A wave pulse on a string moves a distance of 8m in 0.05s.
- Find the velocity of the pulse.
  - What would be the wavelength of the wave on the string if its frequency is 200 Hz ?
17. (a) Define atomicity.
- (b) Calculate the number of atoms in the following compounds :
- Ozone
  - Sodium chloride
- (c) Give an example of polyatomic molecule of an element.
18. (a) Hydrogen and oxygen combine in the ratio of 1:8 by mass to form water. What mass of oxygen gas would be required to react completely with 3 g of hydrogen gas ?
- (b) What is the difference between an atom and a molecule ?
- (c) Calculate the mass of 0.5 moles of Nitrogen ( $\text{N}_2$ ) gas (Atomic mass of N=14u)
19. Why is it difficult to develop vaccine for viral diseases ?
20. Mention the symptoms because of which you will visit the doctor and why?
21. Differentiate between annelida and nematode.
22. What is the basis of the principle of immunization ?
23. (a) When 1 Joule of work is said to be done ?
- (b) The kinetic energy of an object of mass  $m$  moving with a velocity of 5m/s is 25 J. What will be its kinetic energy if its velocity is doubled ?
- (c) An electric oven is rated 2500W. How many units of electrical energy does it use in 4 hours ?

OR

- A boy pushes a book by applying a force of 40 N. Find the work done by this force as the book is displaced through 25 cm along the path.
- A body of mass ' $m$ ' is raised to a vertical height  $h$  through two different paths X and Y. What will be the potential energy of the body in the two cases ? Give reason for your answer.
- An electronic bulb of 60 W is used for 6 hours per day. Calculate the units of energy consumed in one day by the bulb.

24. Give a brief account of the development of the presently accepted model of atom with the contributions made by different scientists. Write two features of this atomic model

OR

Explain Neil Bohr's model of an atom with its postulates and an illustration. There are two elements  ${}_{13}\text{A}^{26}$  and  ${}_{14}\text{B}^{26}$ . Find the number of subatomic particles in each of these. What is the relation between these atoms ?

25. How do clouds formed in the sky ? Draw the biogeochemical cycle involved in it. What are the different states in which water is found the water cycle ?

OR

Draw a labelled diagram to show oxygen cycle in biosphere.

Name the major process through which oxygen is returned to the atmosphere.

Enlist the various processes by which atmospheric oxygen and oxygen dissolved in water is consumed.

### SECTION - B

26. While performing the practical of 'Verification of Laws of Reflection of Sound'. which one of the following precaution should not be followed ?

- (a) Ear should be placed close to the pipe
- (b) Table top should be horizontal
- (c) Length of pipes should be very long
- (d) Reflecting surface should be smooth and hard.

27. Out of the following combinations available for the practical of ' Verification of Laws of Reflection of Sound ' which one will you choose

Tubes Available

A: diameter 15 cm, length 50 cm

B: diameter 2 cm, length 30 cm

Reflecting plates available

X: Polished metal plate

Y: rough wooden plate

- (a) A with X
- (b) A with Y
- (c) B with X
- (d) B with Y

28. In a spring balance the space between 0 and 25 g wt marks is divided into 10 equal parts. The least count of the spring balance is.

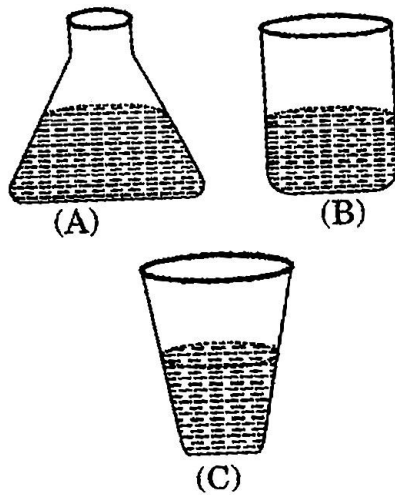
- (a) 2.5 g wt
- (b) 25 g wt
- (c) 0.25 g wt
- (d) 10 g wt

29. While determining the density of brass block using a spring balance and a measuring cylinder. Pranay performed following steps

- (1) Noted the level of water in the measuring cylinder
- (2) Immersed the block in water
- (3) Noted water level with the block inside
- (4) Removed the block and weighed it using a spring balance

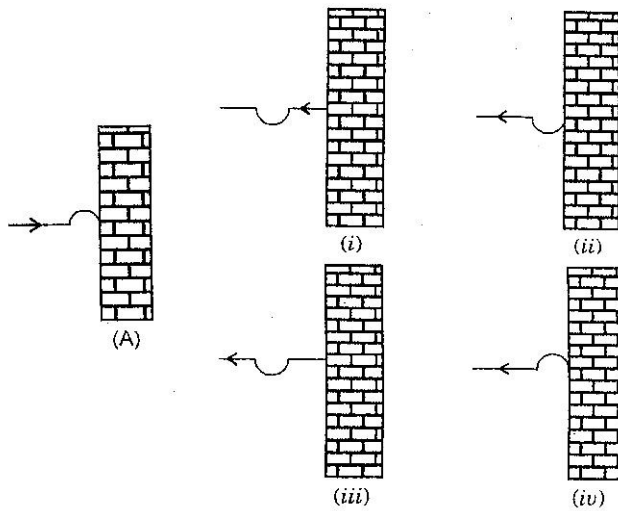
- Incorrect step is
- (a) 1
  - (b) 2
  - (c) 3
  - (d) 4

30. Three students used three different containers (A),(B) and (C) of different shapes, for finding the loss in weight of solid when dipped in water. On dipping a solid sphere in these containers they would observe that the loss in weight is :



- (a) Maximum in (A)      (b) Minimum in (B)  
(c) Maximum in (C)      (d) Same in all
31. When a solid body is fully immersed in a liquid, the volume of the liquid displaced is :
- (a) Greater than the volume of the solid body  
(b) lesser than the volume of the solid body  
(c) Equal to the volume of the solid body  
(d) Depends on the way in which solid is immersed in the liquid
32. To observe and compare the pressure exerted by the solid iron cuboid on sand, two students take the different solid iron cuboid having the same weight but different dimensions. After performing the experiment
- (a) Same conclusion is drawn by them  
(b) Different conclusions are drawn by them  
(c) None of the students draw any conclusion  
(d) Conclusion can be drawn by making the dimensions same
33. To observe and compare the pressure exerted by solid cuboid in its upright position, student 'A' placed the cuboid gently on the loose sand while 'B' placed it on the surface of table top. Who will observe the exerted pressure by the cuboid easily ?
- (a) Student A only      (b) Student B only  
(c) Both students A and B      (d) Neither A nor B

34. If the pulse hits at the fixed end as shown in the diagram A. Immediately reflected pulse is :



- (a) (i)                      (b) (ii)                      (c) (iii)                      (d) (iv)

35. In a wave motion in string, every particle:
- (a) Oscillates                      (b) Displaces from one end to the other end  
(c) Does not displace at all                      (d) Does not oscillate
36. In which group of animals, coelom is filled with blood ?
- (a) Cockroach                      (b) Earthworm                      (c) Starfish                      (d) Ascaris
37. This represents a bit of predesigned plant
- (a) Cotyledon                      (b) Embryo                      (c) Seedless fruit                      (d) Ulothrix
38. The plant body has chitinous cell wall
- (a) Fungus                      (b) Pteridophyta                      (c) Algae                      (d) Bryophyta
39. Marchantia is a
- (a) thallophyta                      (b) pteridophyta                      (c) gymnosperm                      (d) bryophyta
40. Which of the following has three chambered heart ?
- (a) Toad                      (b) Catla                      (c) Rohu                      (d) Ostrich
41. Hard calcium carbonate structures are used as skeleton by
- (a) Spider                      (b) Asterias                      (c) wuchereria                      (d) Herdmania

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