

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 : 15

कुल पृष्ठों की संख्या : 15

General Instructions :

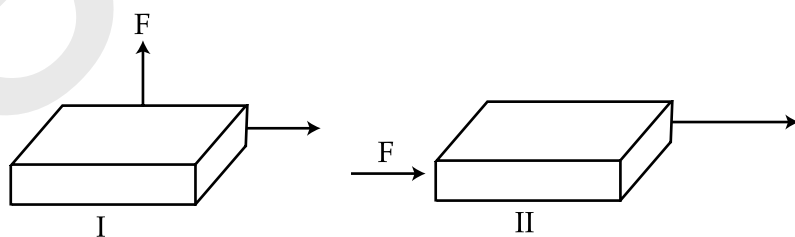
1. The question paper comprises of two sections, **A** and **B**. You are to attempt both the sections.
2. All questions are **compulsory**.
3. There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. Only one option in such question is 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 छोटना 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. State the postulate of Dalton's atomic theory which can explain the law of definite proportions ?
2. Name the fundamental particle not present in the nucleus of hydrogen atom.
3. (1) A flowering plant whose embryo possesses single cotyledon (Give scientific term)
(2) A unicellular, eukaryotic aquatic organism (Name the kingdom)
4. Name two Nitrogen, compounds obtained by industrial fixation.
5. An element 'Z' forms the following compound when it reacts with hydrogen, chlorine, oxygen and phosphorus.
 ZH_3 , ZCl_3 , Z_2O_3 and ZP
 - (a) What is the valency of element Z ?
 - (b) Element 'Z' is metal or non metal ?
6. Why are we normally advised to take bland and nourishing food when we are sick ?
7. Why are antibiotics effective against bacteria but not against viruses ?
8. State two consequences, which one has to face while dealing with an infectious disease ?
9. What is atmospheric fixation of Nitrogen ?
10. A loaded test-tube placed in pure milk sinks to a certain mark (M). Now some water is mixed with the milk. Will the test tube sink more or less ? Explain.
11. If two equal weights of unequal volumes are balanced in air, what will happen when these are completely dipped in water ?
12. The velocity of a body moving in a straight line is increased by applying a constant force F , for some distance in the direction of the motion. Prove that the increase in the Kinetic energy of the body is equal to the work done by the force on the body.
13. In each of the following a force F , is acting on an object of mass m . The direction of displacement is from west to east shown by longer arrow. Observe the diagrams carefully and state whether work done by force is -ve, +ve or 0.

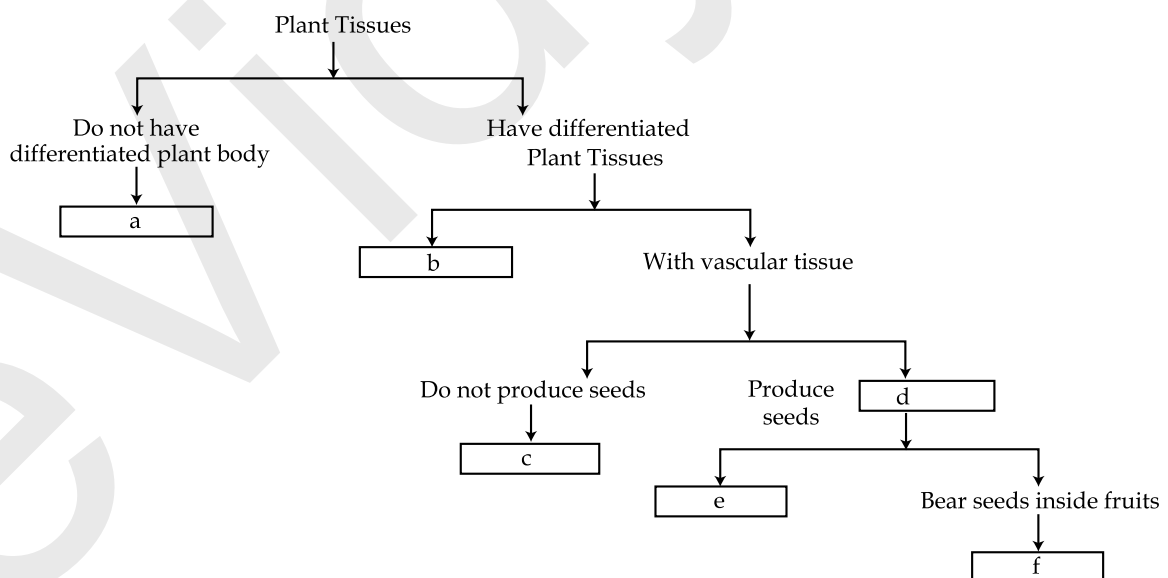


14. (a) Write the formula of the compounds
- (1) Calcium sulphate
 - (2) Aluminium chloride
- (b) The average atomic mass of a sample of an element X is 16.2 u. What is the % of isotopes $^{16}_8\text{X}$ and $^{18}_8\text{X}$ in the sample ?
15. (a) Give one important application of an isotope of cobalt.
- (b) Elements from A to E have in them the distribution of e,p and n as follows.

Elements	Electrons	Neutrons	Protons
A	4	4	3
B	8	9	9
C	18	22	18
D	17	20	17
E	17	18	17

Making use of these data find

- (i) cation
 - (ii) anion
 - (iii) a pair of isotopes
 - (iv) an atom of noble gas
16. In the given classification scheme fill in the boxes with appropriate plant groups :



17. Define the terms and give one example of each
- (i) Bilateral symmetry
 - (ii) Coelom
 - (iii) Triploblastic

18. (a) Which system of our body is activated in response to infection and how it responds ?
 (b) Explain how HIV-AIDS virus affects and damages our body ?
19. Explain how defects in a metal block can be detected using ultrasound.
20. (a) " The flow of energy is unidirectional whereas the biogeochemical transfer is cyclic". Explain why ?
 (b) Justify the statement ____ "The nitrogen cycle is supposed to be an ideal cycle in the biosphere".
21. A light and heavy object have the same momentum, find out the ratio of their Kinetic energies. Which one has a larger Kinetic energy ?
22. (a) Can any object have momentum even if its mechanical energy is zero ? Explain why ?
 (b) A ball is dropped from a height of 10 m. If energy of the ball reduces by 40% after striking the ground ,how high can the ball bounce back ? ($g = 10\text{m/s}^2$)
23. (i) Calculate the molecular mass of CaCO_3 (At mass Ca=40 u, C=12 u, O=16 u)
 (ii) Verify by calculating that
 (a) 5 moles of CO_2 and 5 moles of H_2O do not have the same mass
 (b) 240g of calcium and 240 g of magnesium elements have a mole ratio of 5 : 3
 (At mass H=1u, Ca= 40u, Mg=24u)

OR

- (a) Write the formula of the compounds formed by the following ions
 (i) Cr^{3+} and SO_4^{2-} (ii) Pb^{2+} and NO_3^{-1}
 (b) State the significance of one mole.
 (c) Which has more number of atoms 100g of sodium or 100g of iron
 (At mass Na=23 u,Fe=56u)
24. (a) In coastal area, wind current moves from sea towards the land during day; but during night it moves from land to sea. Discuss the reason.
 (b) How are CFCs harmful for the environment and living beings ?

OR

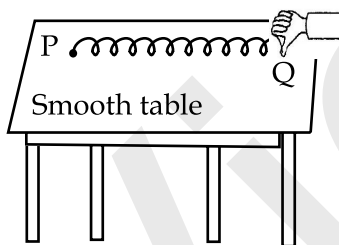
- (a) What are the forms of oxygen found in the atmosphere ?
 (b) "Forests influence the quality of our air, soil and water resources ". Justify the statement.
25. (a) How do our ears permit us to receive the sound ?
 (b) Explain the structure and working of human ear with labelled diagram.

OR

- (a) Write the full name of SONAR. How will you determine the depth of a sea using echo ranging ?
- (b) A SONAR device on a submarine sends out a signal and receives an echo 5 s later. Calculate the speed of sound in water if the distance of the object from the submarine is 3625 m.

SECTION - B

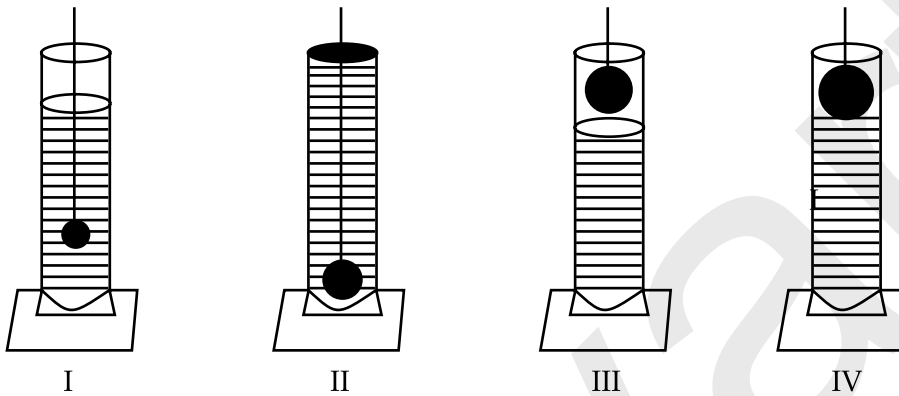
26. While doing experiment for production of sound by using tuning fork care should be taken that
- (a) the vibrating prongs of tuning fork should not touch the table.
- (b) the stem should be on the table
- (c) can be either way
- (d) the vibrating prongs have to touch the table.
27. Two slinky A and B of same length are made up of two different materials. The time taken by 20 pulses to travel in both of them are 70 s and 90 s respectively :
- (a) the pulse travels faster in B than A.
- (b) the pulse travels faster in A than B.
- (c) this does not decide the speed of the pulse in the slinky.
- (d) the speed of the pulse cannot be decided from this observation.
28. A student set up a slinky on a smooth table top in the manner shown here



How can he produce transverse waves in slinky by moving its free end Q ?

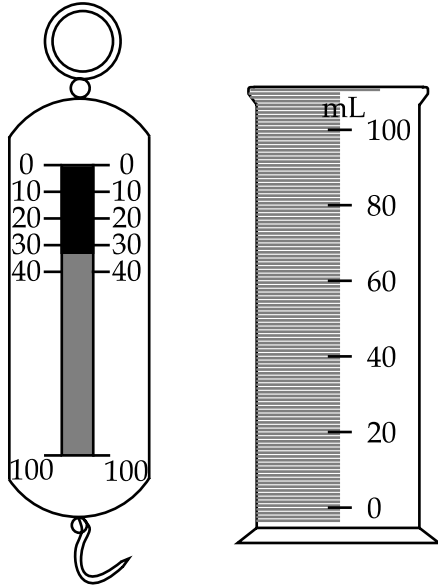
- (a) at an angle of 45° with table top
- (b) backward and forward along length of slinky
- (c) up and down
- (d) left and right
29. When sound gets reflected from a surface
- (a) the angle of incidence > angle of reflection
- (b) the angle of incidence = angle of reflection
- (c) the angle of reflection is equal to 90°
- (d) the angle of incidence < angle of reflection

30. A glass cuboidal has dimensions $10\text{ cm} \times 10\text{ cm} \times 4\text{ cm}$. It is kept with its perfect face ($10\text{ cm} \times 10\text{ cm}$) in contact with the table. If it is lifted and allowed to rest on the table with its smaller surface ($10\text{ cm} \times 4\text{ cm}$) in contact with the table the pressure exerted will
- increase
 - decrease
 - remain unchanged
 - may increase or decrease depending on the shape of table.
31. While measuring the volume displaced by a solid inside a liquid in a measuring jar, which of the following methods should be adopted ?



- As in fig. I the solid should be well inside the liquid.
 - As in fig. (II) the solid should be inside the liquid resting at bottom of the jar.
 - As in Fig. (III) the solid should be partially immersed in the liquid in the jar.
 - Just rest at a surface of liquid in jar as in fig (IV)
32. The same body is immersed in two liquids A and B in succession. The extent to which the body sinks in liquid B is less than in liquid A. What are the conclusions that could be derived from such an observation
- The density of liquid B is more than A
 - The density of liquid A is more than B
 - No such conclusion can be made
 - The density of solid is less than the liquid in both
33. You are given a sphere of radius 2 cm. If you are asked to select a best suited spring balance to determine its weight, then out of the following which one would you prefer ?
- The sphere is made up of an alloy of density 7000 kg/m^3 .
- Range : 0 - 1000 g wt . Least count : 5 g wt
 - Range : 0 - 500 g wt . Least count : 2.5 g wt
 - Range : 0 - 250 g wt . Least count : 2.5 g wt.
 - Range : 0 - 100 g wt . Least count : 1 g wt.

34. The least counts of the spring balance and measuring cylinder are
- (a) 1 g wt ; 1 ml
 - (b) 1 g wt ; 2 ml
 - (c) 2 g wt ; 1 ml
 - (d) 2 g wt ; 2 ml



35. The density of tap water is less than that of sea water . If an object is immersed completely in both one by one , its loss in weight will be
- (a) More in sea water
 - (b) Less in sea water
 - (c) Equal in two cases
 - (d) Zero in sea water but not so in tap water
36. Archeogonia are absent in
- (a) Mosses
 - (b) Bryophytes
 - (c) Gymnosperms
 - (d) Angiosperms
37. Spirogyra is slimy to touch because
- (a) Its cell wall secretes mucilage
 - (b) Pond water is dirty, so the glue like pollutants coat the cell wall of alga.
 - (c) Pectin present in cell wall dissolves in water to form slimy layer.
 - (d) All of the above

38. Biologist think that Arthropods are the most successful of all animals because of
- (a) Presence of chitinous covering that prevents desiccation
 - (b) Joint appendages which help in running a way from predators
 - (c) Open circulatory system
 - (d) Both a and b
39. Cell wall of mycelium is made up of
- (a) Cellulose
 - (b) Pectin
 - (c) Chitin
 - (d) Lignin
40. Most of the fungi are harmful for human beings as they cause skin disease and food poisoning but the biggest role of fungi in nature is :
- (a) are source of antibiotics
 - (b) is increase the absorption of phosphate through mycorrhizal association.
 - (c) do fermentation
 - (d) decompose the dead organisms and clean the environment
41. Feathers and beaks are present in the animals of class :
- (a) Aves
 - (b) Reptalia
 - (c) Amphibia
 - (d) Mammals

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