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Class 9 Science Sample Paper

General Instructions

(i) The question paper comprises four sections A, B, C, and D. There are 36 questions in the question paper. All questions are compulsory.

(ii) (Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple-choice questions (MCQs), very short answer questions, and assertion - reason type questions. Answers to these should be given in one word or one sentence.

(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.

(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.

(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(vii) Wherever necessary, neat, and properly labeled diagrams should be drawn.

Section A

1. The property to flow is unique to fluids. Which one of the following statements is correct?
   A. Only gases behave like fluids
   B. Gases and solids behave like fluids
   C. Gases and liquids behave like fluids
   D. Only liquids are fluids

   OR

   The tincture of iodine has antiseptic properties. This solution is made by dissolving _____
2. Identify the pair of isotopes from the following:
   $^{16}_{8}X$, $^{16}_{7}X$, $^{17}_{8}X$
3. What is the formula for aluminum oxide?

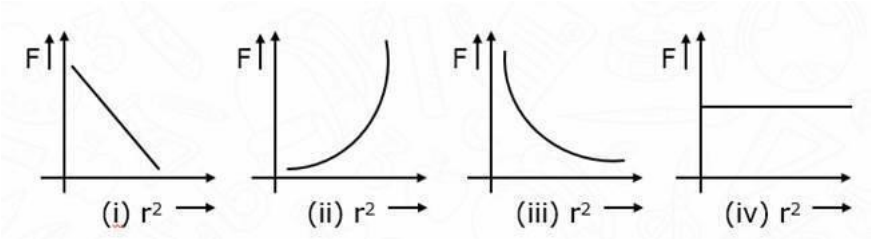
A. AlO B. Al_2O
C. Al_2O_3 D. AlO_3

4. Give an example of a situation in which distance is equal to the displacement
5. Give one example of each uniform and non-uniform in our daily life.
6. Why is your foot hurt more when you kick a stone than when you hit a football?

OR

Why do sparks produced in a grinding stone move tangentially?

7. Which graph represents the relation between the force of gravitation and the distance between two bodies?



A. (i)
B. (ii)
C. (iii)
D. (iv)

8. When a bullet is fired from a gun, why does the gun recoil?
9. Calculate the work done when a force of 15 N moves a body by 5 m in its direction.

OR

Find the energy possessed by an object of mass 10 kg when it is at a height of 6m above the ground. [g = 9.8 ms^{-1}]

10. Rapid elongation of a bamboo stem is due to
    a) Lateral meristem
    b) Intercalary meristem
    c) Apical meristem
    D) Cambium
11. If the organization of a cell is destroyed due to some physical or chemical influence, what will happen?
12. Give the function of the antibiotic penicillin.
13. What is bad ozone and good ozone?
14. DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of the reason (R).
    Assertion: A solution of table salt in a glass of water is homogeneous.
    Reason: A solution having a different composition throughout is homogeneous.

A. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of the assertion
B. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)
C. Assertion (A) is true but reason (R) is false.
D. Assertion (A) is false but reason (R) is true.

15. Assertion: The utilization of glucose to provide energy to living things involve the process of respiration in which oxygen may or may not be used to convert glucose back into carbon dioxide
Reason: This carbon dioxide then goes back into the atmosphere
Choose the correct alternative:
a) Both A and R are true, and R is the correct explanation of A.
b) Both A and R are true, R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
16. Assertion: If the v-t graph is a straight line parallel to the time axis then it means the body is at rest.
Reason: When the value on the time axis increases and that on the velocity axis remains the same then it means velocity is constant.
A. Both assertion and reason are true and the reason is the correct explanation of the assertion
B. Both assertion and reason are true but reason is not the correct explanation of the assertion
C. Assertion is true but Reason is false.
D. Assertion is false but reason is true
17. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and related studied concepts:
Complex tissues are made of more than one type of cell. All these cells coordinate to perform a common function. Xylem and phloem are examples of such complex tissues. They are both conducting tissues and constitute a vascular bundle. Vascular tissue is a distinctive feature of the complex plants, one that has made possible their survival in the terrestrial environment.
(a) What is meant by conducting tissue?
(b) Give specific roles of xylem and phloem.
(c) Name the components that make xylem tissue.
(d) Name the dead components of xylem and phloem.
18. Read the following and answer any **four** questions from 18 (a) to 18 (e)

Three mixtures A, B, and C are obtained by stirring three different solids in water taken in separate beakers. When mixture A is allowed to stand for some time, then its particles settle at the bottom of the beaker. When a beam of light is passed through mixture A in a dark room, the path of light becomes visible when observed from the side of the beaker. When mixture B is allowed to stand for a considerable time, even then its particles do not settle down. Mixture B, however, scatters the beam of light just like mixture A. The particles of mixture C do not settle down on keeping and it also does not scatter a beam of light passing through it.

(a) What are the mixtures like A known as?
(b) What are the mixtures like B known as?
(c) What are the mixtures like C known as?
(d) Name the phenomenon exhibited by A and B which occurs on passing a beam of light through them.
(e) Name one mixture each which is like (i) A (ii) B, and (iii) C.

19. Read the following and answer any **four** questions from 19(a) to 19 (e)

The quantity of matter contained in an object is called mass. It remains constant whether the object is on earth, the moon, or even in outer space. Weight on the other hand is the force of attraction of earth with which an object is attracted towards the earth. Now, suppose a man weighs 600 N on earth, his weight on the moon would be 100 N.

a. The mass of man on earth, if g is 10 m/s^2 is
A. 60 kg
B. 10 kg
C. 6000 kg
D. 1000kg

b. The mass of man on the moon is
A. 60 kg
B. 10 kg
C. 6000 kg
D. 1000kg

c. Acceleration due to gravity on the moon is
A. 10 m/s^2
B. 9.8m/s^2
C. 1.66 m/s^2
D. 1 m/s^2

d. The weight of a body of mass 15 kg on the moon will be

A. 24.9 N
B. 150 N
C. 15 N
D. 10 N

e. The formula for the acceleration due to gravity at the surface of a planet is

A. $g = \sqrt{\frac{GM}{R^3}}$

B. $g = \sqrt{\frac{GM^2}{R^2}}$

C. $g = \sqrt{\frac{GM}{R^2}}$

D. $g = \sqrt{\frac{GM}{R}}$

20. Read the following and answer any **four** questions from 20 (a) to 20 (e)

Waves can be categorized— into three types, viz. electromagnetic waves, mechanical waves, and matter waves. Electromagnetic waves do not require any material medium for their propagation, i.e., they can travel through a vacuum while mechanical waves require a material medium for their propagation i.e. they cannot propagate through the vacuum, on the other hand, matter waves are the waves associated with fast-moving particles such as electrons in accordance with the de-Broglie hypothesis of dual nature of matter.

a. Sound waves in air are
(a) electromagnetic waves
(b) mechanical waves
(c) matter waves
(d) either (a) or (b).

b. Light travels in the form of
(a) electromagnetic waves
(b) mechanical waves
(c) matter waves
(d) tiny particles

c. Which of the following is an electromagnetic wave?
(a) A wave set up on a stretched string
(b) A wave set up on the surface of the water
(c) An X-ray
(d) All of the above

d. A longitudinal wave travels from east to west in the air in which direction do the particles of air move?

A. East to west
B. East to west and north to south
C. North to south
D. South to north
E.

e. Which of the following statements about sound waves is correct?
A. A sound wave is a type of longitudinal waves
B. Sound wave follows the same laws of reflection as lightwave
C. The speed of the sound wave in the air is 332 m/s
D. All the above

Section B

21. Differentiate between the plasma membrane and cell wall.

OR

Give the location and functions of the following tissues: (a) Cartilage (b) Areolar tissue

22. Chloroplast and mitochondria are referred to as semi-autonomous organelles. Justify?
23. Find the ratio by mass of the combining elements in the following compounds.
(a) C_2H_5OH (b) NH_3

OR

Classify each of the following on the basis of their atomicity.
(a) F_2, NO_2, P_4O_{10}
(b) C_2H_6, N_2O, HCl
(c) P_4, H_2O_2, He
(d) Ag, CH_4, O_3

24. What is meant by the concentration of a solution? Explain by giving an example.
25. A body is thrown vertically upwards. Its velocity goes on decreasing. What happens to its kinetic energy as its velocity becomes zero?
26. A ball is shot vertically upward with a given initial velocity. It reaches a maximum height of 100 m. If on a second shot. the initial velocity is doubled then how high will the ball reach.

Section C

27. Explain the structural difference between plastids and mitochondria. Write one similarity between the two.

OR

List any two differences between striated and cardiac muscle with respect to their structure and location.

28. State one important function of each of the following: (a) areolar tissue (b) cuboidal epithelium
29. Name the tissue that smoothens bone surfaces at joints. Describe its structure with the help of a diagram.
30. (i) Why does the level of water not change when salt is dissolved in water? **(1.5)**

    (ii) What is the difference between aqueous and non-aqueous solutions? **(1.5)**
31. Verify by calculating that

    (a) 5 moles of CO_2 and 5 moles of H_2O does not have the same mass. (1.5)

    (b) 240 g of calcium and 240 g magnesium elements have a mole ratio of 3:5. (1.5)
32. (a) What is an octet? How do elements reach an octet? **(1)**

    (b) Make a schematic atomic structure of Magnesium and Phosphorus. (Given: number of protons of Magnesium = 12, Phosphorus = 15). **(2)**
33. An object with a mass of 10 kg moves at a constant velocity of 10 m/sec. A constant force then acts for 4 seconds on the object and gives. It then moves with a speed of 2 m/s in the opposite direction. What is the acceleration produced?

Section D

34. (a) It is said that molecules of many elements, such as argon(Ar), helium (He), neon (Ne), etc. are made-up of only one atom of the element. Why is it so? (3)

    (b) Give differences between an atom and an ion.

    OR

    (a) Why does the solubility of any solute change with a change in temperature? (2)

    (b) Why is the Tyndall effect not observed when light passes through a true solution or suspension? (2)

    (c) Why cream separates from milk on churning? (1)
35. a) How is a prokaryotic cell different from a eukaryotic cell?

    b) What would happen if the plasma membrane ruptures or breaks down?

c) What would happen to the life of a cell if there was no Golgi apparatus?

36. (a) What happens to the potential energy of a body when its height is doubled?
(b) Give one example each of the body possessing: (i) kinetic energy, and (ii) potential energy.
(c) How much is the mass of a man if he has to do 2500 joules of work is climbing a tree 5 m tall?

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