# DAYANAND ANGLO VEDIC PUBLIC SCHOOL, AIROLI
## SAMPLE PAPER-TERM I (2024-25)
## SUBJECT-SCIENCE (STD-IX)

**MAXIMUM MARKS : 80**                                    **TIME ALLOWED :3 HRS**

**General Instructions:**
i.  This question paper consists of 39 questions in 5 sections.
ii. All questions are compulsory. However, an internal choice is provided in some questions, a student is expected to attempt only one of these questions.
iii. Section A consists of 20 objective type questions carrying 1 mark each.
iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
v.  Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the rage of 80 t0 120 words.
vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

## SECTION A

**Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.**

1.  If 20 g sugar and 5g coffee is dissolved in 100g water to make coffee, then % composition of sugar in coffee:
    (a) 20%          (b) 16%          (c) 25%          (d) 5%

2.  In which of the following conditions, the distance between the molecules of hydrogen gas would increase
    (a) Increasing pressure on hydrogen contained in a closed container
    (b)Adding other gas in container.
    (c) Increasing the volume of the container of hydrogen gas.
    (d) Adding more hydrogen gas to the container without increasing the volume of the container.

3.  Cotton clothes are suitable for summer season because:
    (a) cotton is a soft fabric.                    (b) cotton absorbs sweat
    (c) cotton is light weight                      (d) cotton is a natural fibre

4.  What happens to arrangement of particles when a substances changes from liquid to solid state:
    (a) interparticle spaces increases.            (b) no change in arrangement of particles
    (c) interparticle spaces decreases.            (d) arrangement of particles is more irregular

5.  Which of the following pair exist as liquid at room temperature:
    (a) Mercury , Caesium      (b) Caesium ,Gallium      (c)Mercury, Bromine    (d) Bromine, Iodine

6.  Fog is :
    (a) liquid in gas type aerosol                 (b) solid in gas type aerosol
    (c) gas in liquid type aerosol                 (d) gas in solid type aerosol

7.  Where are the essential proteins and lipids required for cell membrane, manufactured?
    (a) Lysosome          (b) Chromosomes     (c) Endoplasmic reticulum    (d) Mitochondria

8.  The process by which water moves through a semi-permeable membrane from a region of high concentration to a region of lower concentration, thereby equalizing water concentration is called:
    (a) Evaporation          (b) Diffusion          (c) Osmosis          (d) Endocytosis

9.  The phenomenon where cytoplasm shrink in a hypertonic medium is called:
    (a) Phagocytosis          (b) Plasmolysis     (c) Acidolysis          (d) Allolysis

10. The fluid in the vacuole of a plant cell, is called
    (a) Tonoplast          (b) Cytoplasm     (c) Cell sap          (d) Protoplasm

11. Rapid elongation of a bamboo stem is due to _____
    (a) Lateral meristem    (b) Intercalary meristem    (c) Apical meristem    (d) Cambium
12. Which of the following is a characteristic feature of meristematic tissue?
    (a) Cells with large vacuoles    (b) Presence of intercellular spaces
    (c) Rapid cell division    (d) Highly specialized cells
13. The distinguishing feature of sclerenchyma is:
    (a) Living cells with thickened walls    (b) Living cells with thin walls
    (c) Dead cells with thin walls    (d) Dead cells with thickened walls
14. Chlorenchyma and aerenchyma are modified/ specialised_____
    (a) Phloem    (b) Parenchyma    (c) Collenchyma    (d) Sclerenchyma
15. The earth attracts the moon with force F. The moon will attract the earth with a force :
    (a) F/2    (b) 2F    (c) F/4    (d) F
16. When a toothpaste tube is squeezed, its shape changes. The force responsible for this is an example of :
    (a) Balanced forces    (b) Centripetal forces
    (c) Unbalanced forces    (d) Centrifugal forces

    Question No. 17 to 20 consist of two statements- Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:
    *(a) Both A and R are true, and R is the correct explanation of A.*
    *(b) Both A and R are true, and R is not the correct explanation of A.*
    *(c) A is true but R is false.*
    *(d) A is false but R is true.*
17. ASSERTION (A): Water droplets are seen on the outer surface of tumbler containing ice cold water.
    REASON (R): Condensation of water vapours present in the air takes place.
18. ASSERTION (A): Sodium is malleable.
    REASON (R): Metals are generally hard.
19. ASSERTION (A): The endoplasmic reticulum which lacks ribosomes is called smooth endoplasmic reticulum.
    REASON (R): SER is mainly involved in protein synthesis.
20. ASSERTION (A): The displacement of an object can be either positive, negative or zero.
    REASON (R): Displacement has both the magnitude and direction.

## SECTION B

**Question No. 21 to 26 are very short answer questions.**

21. How rate of evaporation changes with change in humidity and surface area. Explain with help of example.
    **OR**
    Define diffusion. How rate of diffusion changes with change in temperature?
22. If a potted plant is covered with a glass jar, water vapours appear on the wall of glass jar. Explain why?
23. (a) What would happen, if there is an absence of cell wall in a plant cell?
    (b) Give one difference between nucleus and nucleoid.
24. An inflated balloon lying on the surface of a floor moves forward when pierced with a pin. Why ?
25. A particle moves over three quarters of a circle of radius *r* cm. Calculate the magnitude of its distance and displacement.
26. (a) How does the force of attraction between the two bodies depend upon their masses and distance between them ?
    (b) A student thought that two bricks tied together would fall faster than a single one under the action of gravity. Do you agree with his hypothesis or not ? Comment.

## SECTION C

**Question No. 27 to 33 are short answer questions**

27. (a) At which of the following temperature the evaporation of water takes place at faster rate:

     (i) 275 K           (ii) $25^0$C. State reason for your answer.
    (b) Arrange the three states of matter in increasing order of their kinetic energy.
     (c)Why does the level of water not change when salt is dissolved in it?

28. Write observation for following experiments stating reason:

    (a) Adding carbon disulphide to a mixture of iron filings and sulphur powder.

    (b)Adding dilute HCl to a mixture of iron filings and sulphur powder and bringing a burning match stick to the mouth of the test tube.

    (c) Bringing a magnet near to the compound of iron and sulphur.

29. (a) Why does mitochondria have largely folded inner membrane?
    (b) Which organelle makes the digestive enzyme of lysosome?
    (c) How does a living cell perform the basic functions?

30. Draw the diagram showing different types of meristematic tissues. Write down the function of each of its types.

**OR**

    Observe the following diagram and answer the questions.
    (a) Identify A and B        (b) Mention their functions
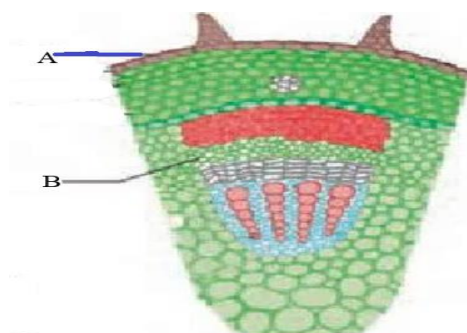


31. The distance between Delhi and Agra is 200 km. A train travels the first 100 km at a speed of 50 km/h. How fast must the train travel the next 100 km, so as to average 70 km/h for the whole journey ?

**OR**

    A car acquires a velocity of 72 km/h in 10 sec starting from rest. Find (i) the acceleration (ii) the distance travelled in this time.

32. In the velocity-time graph for a moving object shown below.
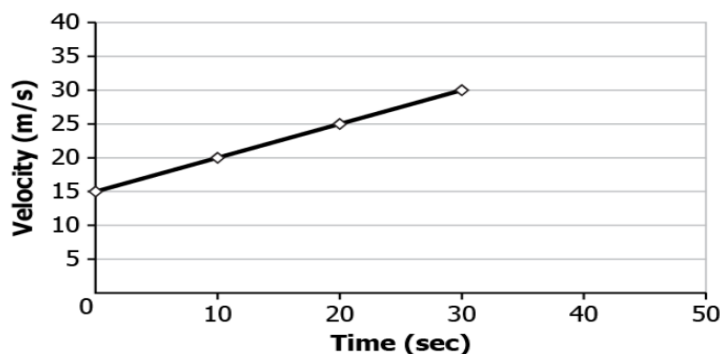


    (a) What will be the velocity of the car at 40 s assuming velocity changes with same rate ?
    (b) Find the distance travelled between 10 to 30 second.
    (c) Find the acceleration during 0 to 20 second ?

33. A force of 5 N gives a mass $m_1$, an acceleration of 8 ms$^{-2}$ and a mass $m_2$, an acceleration of 24 ms$^{-2}$. What acceleration would it give if both the masses are tied together?

**Question No. 34 to 36 are long answer questions.**

34. (a) The solubility of a salt X in 100 g water at 353 K is 36 g, based on the given information answer the following :
(i) Calculate the amount of solute required to prepare saturated solution in 150 g of water at 353K.
(ii) 10 g of salt X is dissolved in 50 g water at 353 K. Identify whether the solution formed is saturated or unsaturated.
(iii) What happens to solubility if the solution is heated to 400 K.
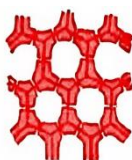(b) Differentiate between homogenous and heterogenous mixture.( any two points)

**OR**

(a) Why true solutions are stable?
(b) Write any two characteristics of colloids.
(c) Differentiate between aerosols and foam.
(d) Identify pure substances from following :
vinegar , calcium carbonate, 22 K gold, milk.

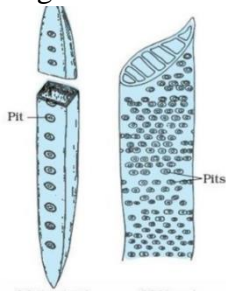35. Observe the following figure and answer the questions.



**(A)**                              **(B)**
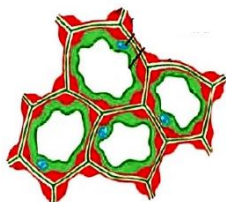
(a) Identify figure A and B.
(b) Mention any two characteristics of figure B.
(c) Write any one function of figure A.

**OR**

(a) Identify the given figures.



(b) State in brief their structure.
(c) Explain the structure and function of cork in the plant body.

36. (a) State Newton's second law of motion.
(b) A truck of mass **M** is moving under the force **F**. If the truck is then loaded with an object equal to the mass of truck and the driving forces half then how does the acceleration change ?
(c) Water sprinkler used for grass lawns begins to rotate as soon as the water is supplied. Explain the principle on which it works.

**OR**

What is momentum ? Write its SI unit. Interpret force in terms of momentum.
Represent the following graphically,
(a) Momentum versus velocity when mass is fixed.
(b) Momentum versus mass when velocity is constant.
(c) Why are tyres corrugated and made rough?

## SECTION E

**Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts.**
**Internal choice is provided in one of these sub-parts.**

37. A student heats a beaker containing ice and water. He measures the temperature of the content of beaker as a function of time.
    (a) Which amongst 100 °C and 273 K is greater value?
    (b) In the mixture of ice and water , which will float and why?
    (c) Which of the following would correctly represent the result of the given experiment? Justify your choice.
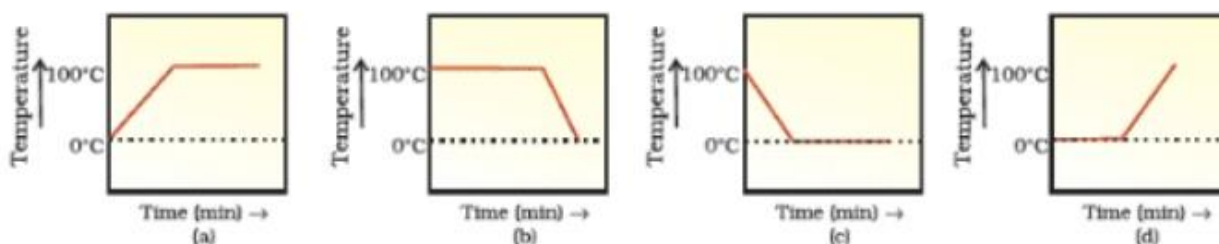


**OR**

    (c) Name the process of conversion of solid to liquid and liquid to solid. Why does temperature remains constant during change of state of matter?

38. All living Organisms are made up of cells and these cells perform all the functions essential for the survival of the Organism eg. Respiration, digestion, excretion etc. In Unicellular organisms, a single cell carries out all these functions and in multicellular organisms different group of cells carry out different functions. Every cell has a membrane around it to keep its own contents separate from the external environment. Large and complex cells, including cells from multicellular organisms, need a lot of chemical activities to support their complicated structure and function. To keep these activities of different kinds, separate from each other, these cells use membrane-bound little structures within themselves. The cytoplasm is the jelly like fluid content inside the plasma membrane which contains many specialised cell organelles.
    (a) Enlist the types of Endoplasmic Reticulum.
    (b) Define membrane biogenesis.
    (c) Explain the significance of mitosis and meiosis.

**OR**

    (c) Differentiate between meiosis and mitosis.

39. A research team is studying the effects of gravity on different planets. They compare the weight of an object on Earth, Mars, and Jupiter based on the data given below.

| Name of the planet | Value of g |
|---|---|
| Earth | 9.8 m/s$^2$ |
| Mars | 3.7 m/s$^2$ |
| Jupiter | 24.8 m/s$^2$ |

    (a) Explain why the weight of the object differs on these planets while its mass remains the same.
    (b) Compare the gravitational force experienced by the same object on the surface of these planets and relate it to the planet's mass and radius.
    (c) Given the mass of the object as 5 kg, calculate its weight on Earth and Jupiter.

**OR**

    (c) If an astronaut can jump 1 m high on Earth, how high could they jump on Mars, assuming their initial velocity remains the same ?