



DELHI PUBLIC SCHOOL, CHANDIGARH

Periodic Test II Examination, Session 2023-24

Class-IX SCIENCE (Set-2)

TIME : 3 Hrs

Maximum Marks : 80

General Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- 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.
- 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.
- Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

- In which of the following conditions, the distance between the molecules of hydrogen gas would increase?
 - Increasing pressure on hydrogen contained in a closed container
 - Some hydrogen gas leaking out of the container
 - Increasing the volume of the container of hydrogen gas
 - Adding more hydrogen gas to the container without increasing the volume of the container

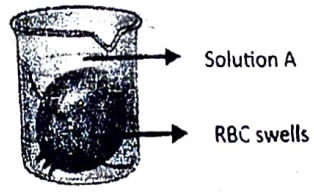
(a) (i) and (iii)	(b) (i) and (iv)
<input checked="" type="checkbox"/> (c) (ii) and (iii)	(d) (ii) and (iv)
- The boiling point of water at sea level is

(a) 0°C	(b) 273 K
<input checked="" type="checkbox"/> (c) 373 K	(d) 273°C
- Dry ice is

(a) water in solid state	(b) water in gaseous state
(c) CO ₂ in liquid state	<input checked="" type="checkbox"/> (d) CO ₂ in solid state
- On converting ²⁰¹⁹25°C, 38°C and 66°C to Kelvin scale, the correct sequence of temperature will be

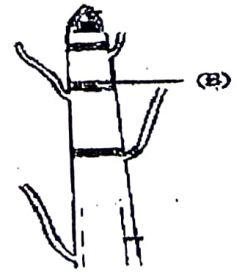
<input checked="" type="checkbox"/> (a) 298 K, 311 K and 339 K	(b) 298 K, 300 K and 338 K
(c) 273 K, 278 K and 543 K	(d) 298 K, 310 K and 338 K

5. Which of the following are homogeneous in nature?
- (i) ice
 - (ii) wood
 - (iii) soil
 - (iv) air
- (a) (i) and (iii) (b) (ii) and (iv)
- (c) (i) and (iv) (d) (iii) and (iv)
6. Sol and gel are examples of
- (a) Solid-solid colloids
 - (b) Sol is a solid-liquid colloid and gel is liquid solid colloid
 - (c) Sol is solid-solid colloid and gel is solid-liquid colloid
 - (d) Sol is a liquid-solid colloid and gel is a solid-liquid colloid
7. Tincture of iodine has antiseptic properties. This solution is made by dissolving:
- (a) iodine in potassium iodide
 - (b) iodine in Vaseline
 - (c) iodine in water
 - (d) iodine in alcohol
8. Cell theory was given by
- (a) Robert Brown
 - (b) Schleiden and Schwann
 - (c) Hooke
 - (d) Haeckel
9. The figure below shows change seen in RBC when placed in a beaker with solution A. Identify solution A.



- (a) isotonic solution
 - (b) hypertonic solution
 - (c) concentrated solution
 - (d) hypotonic solution
10. The undefined nuclear region of prokaryotes is also known as
- (a) nucleus
 - (b) nucleolus
 - (c) nucleoid
 - (d) nucleic acid

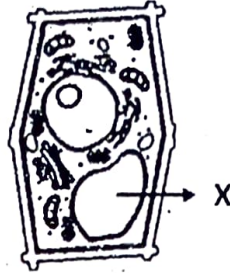
11. Identify tissue B



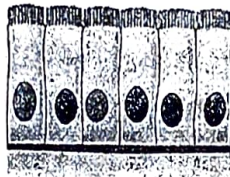
- (a) intercalary meristem
- (b) lateral meristem
- (c) apical meristem
- (d) vertical meristem

Section B

21. Why is evaporation called a surface phenomenon?
22. Identify the organelle X. Explain what would happen if this organelle is removed from the cell.



23. Give the difference between cuboidal epithelium and columnar epithelium based on the cell shape and location.



Columnar epithelium



Cuboidal epithelium

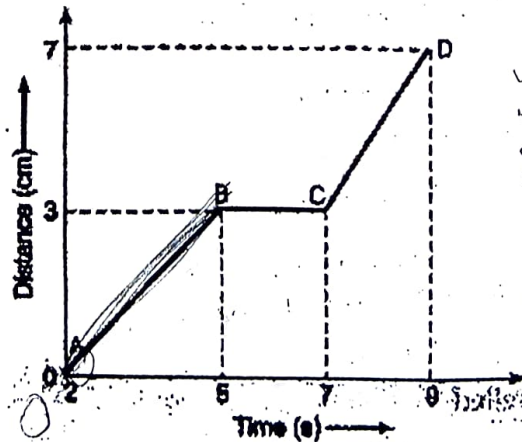
OR

✓ Give two functions of blood.

24. The graph given below shows the positions of a body at different times. Calculate the speed of the body as it moves from

(i) A to B and

(ii) B to C.



$$\begin{aligned}
 v &= 0 \\
 v &= ? \\
 s &= 3 \\
 t &= 5
 \end{aligned}$$

$$\begin{aligned}
 v^2 &= u^2 + 2as \\
 v &= u + at \\
 s &= ut + \frac{1}{2}at^2
 \end{aligned}$$

25. ✓ Why does a body reach the ground quicker at poles than at the equator when dropped from the same height?

OR

Suppose that the radius of the earth becomes thrice of its original radius without any change in its mass. Then what will happen to your weight? Justify

26. How is bacterial cell different from cheek cell based on nuclear region and chromosomes?

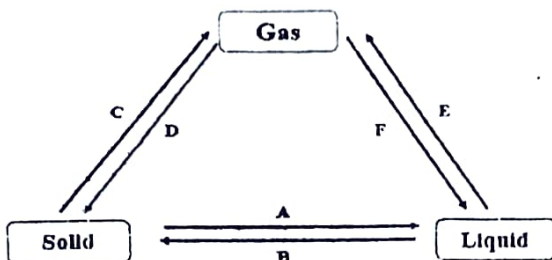
Section C

27. Give reasons:

- (a) Convert 300 K Into Celsius scale and -10°C Into Kelvin scale.
- (b) What is dry ice? What happens when pressure under which it is stored is reduced to 1 atmosphere?

OR

The flowchart given below shows the interconversion of three states of matter. Complete the flowchart with correct name of the process against each letter A, B, C, D, E and F.



(a) Calculate the mass of sodium sulphate required to prepare its 20% solution in 100g of water?

(b) Two solutions are given to you- Sand in water and salt in water. Which properties will help you differentiate between the two? Write any three properties of differentiation.

OR

- (a) Calculate the mass of water and mass of glucose required to make 250 g of 40% solution of glucose.
- (b) Identify colloids and true solutions from the following:
Fog, aluminium paint, vinegar and glucose solution.

29. Draw a neat diagram of an animal cell showing all organelles and label the following:

- (a) part which helps in cellular reproduction. *nucleus*
- (b) organelle which packages, modifies and dispatches materials. *golgi*
- (c) organelle called powerhouse of the cell. *mitochondria*
- (d) outer most boundary of the cell. *cell membrane*

30. (a) Identify the type of muscles present in organs X and Y.

(b) How are they different based on their nature and location?



X



Y

31. Write three points of differences between speed and velocity.

32. Describe in brief an activity to illustrate the property of inertia of motion.

33. What is the importance of Universal law of gravitation.

Section D

34. (a) Why do we spread clothes while putting them for drying in the sun?
(b) State which property of gas is used in supplying oxygen cylinder to hospital.
(c) State one similarity and one difference between evaporation and boiling.
(d) Rahul was making tea in a kettle. Suddenly, he felt an intense puff of steam gushing out of the spout of the kettle. He wondered whether the temperature of the steam was higher than that of the water boiling in the kettle. Which will cause more burns and why? Which will have higher temperature?

OR

- (a) Why do sugar crystals dissolve faster in hot water than cold water?
(b) The diagram below shows burning of an oil lamp.



Draw the arrangement of particles of substance 'X' and 'Y' when the lamp is burning. Also give the reason for your choice.

- (c) Substance 'A' has high compressibility and can be easily liquefied. It can take up the shape of any container. Predict the nature of the substance. Enlist four properties of this state of matter.
35. (a) Name and draw a neat well labelled diagram of the plant tissue which has lignin. *Sclerenchyma*
(b) List the features of epidermis in desert plants and cork.

OR

- (a) Identify the tissue and label X, Y and Z.



- (b) What is the importance of the above tissue in plants?
(c) Give the difference between simple and complex permanent tissues.
36. (a) State Newton's second law of motion. Write its mathematical expression.
(b) A bullet of 10 g strikes a sand bag at a speed of 10^3 ms^{-1} and gets embedded after travelling 5 cm. Calculate
(i) the resistive force exerted by the sand on the bullet.
(ii) the time taken by the bullet to come to rest.

OR

- (a) State Newton's first law of motion.
(b) Define Inertia.
(c) Why does dust come off when a carpet is beaten with a stick?

Section E

37. The table given below shows hints given by the quiz master in a Quiz.

S.No	Hint
(i)	Substance X makes a heterogeneous mixture when dissolved in water while Y makes a homogeneous solution when dissolved in water.
(ii)	Solution of X may scatter light while solution of Y does not.
(iii)	X is used to write on a blackboard while Y is a blue colored salt.

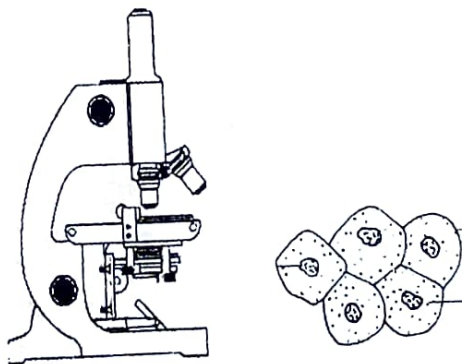
Based on the above hints, answer the following questions:

- (a) Give the name of substance X and Y. *X → Chalk, Y → Iodine.*
- (b) What could be the particle size for X and Y? *100mm, 1mm*

OR

What would happen when solution of X and Y are filtered?

38. Every cell has three main features: plasma membrane, nucleus and cytoplasm. All activities inside the cell and interaction of the cell with its environment are possible because of these features. The nucleus is dense, usually centrally located. It plays a crucial role in cell division and controls all the metabolic activities of the cell. The cytoplasm is present inside the plasma membrane. It contains all the cell organelles.

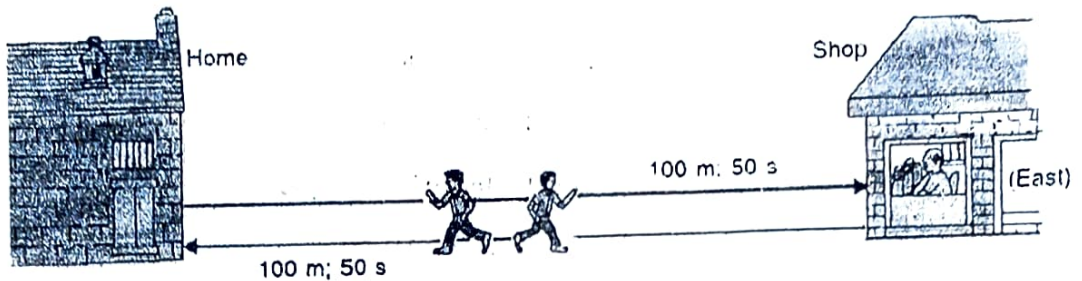


- (a) Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell? *SER*
- (b) Name the two organelles in a plant cell that contain their own genetic material and ribosomes. *Mitochondria, Plastids*
- (c) Where are the essential proteins and lipids required for cell membrane manufactured? Name the process. *ER, membrane biogenesis.*

OR

Give reasons why nucleus is important for the cell.

39. Suppose the boy first runs a distance of 100 meters in 50 seconds in going from his home to the shop in the East direction, and then runs a distance of 100 meters again. in 50 seconds in the reverse direction from the shop to reach back home from where he started (see Figure).



- What is the speed of the boy?
- What is the velocity of the boy?
- A boy is sitting on a merry-go-round which is moving with a constant speed having a diameter 2m. What is his displacement and distance in covering half a circle?

OR

Define Uniform circular motion. What is the direction of acceleration in circular motion?

~~Q.1 x 100~~

~~100~~

~~1~~

~~100~~

~~100~~

~~100~~