

DAV PUBLIC SCHOOLS, DELHI-NCR
SAMPLE PAPER (2026-27)
CLASS: IX
SUBJECT: SCIENCE

TIME: 3 Hours

M.M: 80

GENERAL INSTRUCTIONS:

Read the following instructions carefully and follow them:

- i. Please check that this question paper contains 9 printed pages.
- ii. This question paper consists of 39 questions. All questions are compulsory.
- iii. Question paper is divided into THREE sections- A, B and C
SECTION A: Biology (27 marks)
SECTION B: Chemistry (25 marks)
SECTION C: Physics (28 marks)
- iv. The question paper has MCQ'S, VSAs, SAs, LAs and Case or source-based questions. Marks are given against each question.
- v. There are case based questions (CBQ's) with three sub questions and are of 4 marks each.
- vi. It is compulsory to answer each question in its respective question. Do not mix answers of one section into the other section.
- vii. Instructions are given with each section and question, wherever necessary.
- viii. There is no overall choice in the question paper. However, an internal choice has been provided in few questions. Only one of the choice in such questions must be attempted.
- ix. Reading time of 15 minutes will be given to the students.

SECTION A(BIOLOGY)

1. Scientists consider hot springs a possible place for the origin of life because they: 1
(A) contains large amount of oxygen
(B) show conditions like early life.
(C) are always found in cold regions
(D) contain only unicellular organisms
2. Reena got injured on her thumb while shredding coconut. After a few days she noticed pus accumulation around the infected area. Which type of blood cells would have caused the formation of pus? 1
(A) Red Blood Cells
(B) Platelets
(C) White Blood cells
(D) Blood Plasma
3. A student observed an animal cell under a microscope. The actual size is 200µm while the image formed is 10 mm long. The magnification produced by the microscope is: 1

- | | | | | | |
|----|---|--------------------|-------------------------------|---------------|---|
| | (A) 25X | (B) 200X | (C) 100X | (D) 50X | |
| 4. | Which type of meristem is responsible for increase in girth of a sapling into a big tree? | | | | 1 |
| | (A) Lateral | | (B) apical | | |
| | (C) Intercalary | | (D) both Apical & Intercalary | | |
| 5. | A gardener performs grafting, but the grafted part dies after a few days. Which of the following is most likely reason? | | | | 1 |
| | i. the plants were not watered regularly | | | | |
| | ii. root system was not healthy | | | | |
| | iii. grafted surfaces did not join properly | | | | |
| | iv. leaves received adequate sunlight | | | | |
| | (A) only iii | (B) both ii and iv | (C) both iii and iv | (D) i, ii, iv | |
| 6. | Which of the following is true with respect to meiosis? | | | | 1 |
| | (A) one division produces two daughter cells | | | | |
| | (B) two divisions produce four daughter cells | | | | |
| | (C) one division produces four cells | | | | |
| | (D) two divisions produce eight daughter cells | | | | |
| 7. | Observe the diagram shown below and identify the part labeled A | | | | 1 |

- (A) spores (B) sporangium (C) hyphae (D) rhizopus

Answer these questions by selecting the appropriate option given below:

B. Both A and R are true, and R is not the correct explanation of A.

D. A is false but R is true.

Reason(R): The vacuole of plant cell loses water and makes the cell less firm.

Reason(R): Perishable food items are easily spoiled by virus, bacteria and moulds.

relatively less common in plants than in animals?

(A) Identify the type of joint that

ii. immovable

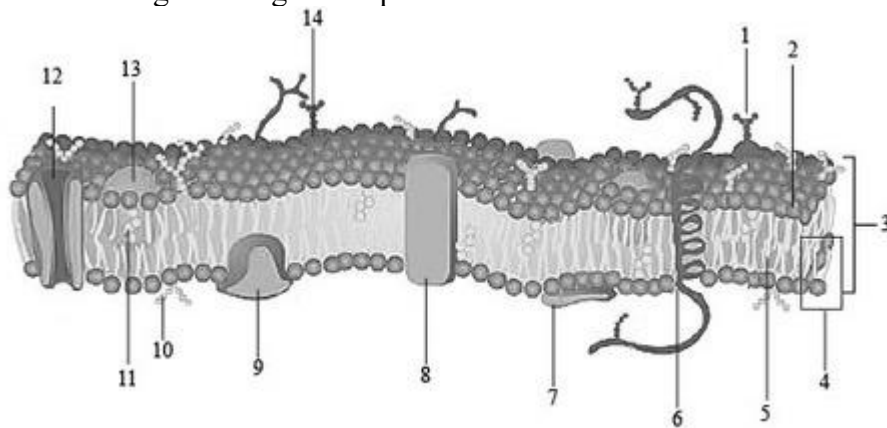
OR

(B) What is meant by Vertebral column? How does it provide flexibility to our body?

12. "Bryophyllum leaf is called the mother of Millions." Justify the statement. **2**

13. Differentiate between Parenchyma, Collenchyma and Sclerenchyma based on their: **3**
(A) Structure of cell wall (B) Location in the plant body

14. Observe the given diagram of plasma membrane **4**



Attempt either subpart A or B.

(A) Describe the arrangement of fat molecules in part 3 of the plasma membrane.

OR

(B) How does arrangement of molecules in the plasma membrane explain the term Fluid Mosaic?

(C) What would happen if part 12 was absent from the plasma membrane?

(D) Which feature of plasma membrane makes it suitable for communicating with neighboring cells.

15. Attempt either option A or B. **5**

(A) Give reasons:

- (i) Meristematic cells have dense cytoplasm, prominent nucleus but no vacuoles.
- (ii) We get crunchy and granular feeling when we chew guava.
- (iii) Companion cells are efficient in controlling the cellular function of phloem tissue.

OR

(B) (i) Mention characteristic differences between bone and cartilage.

(ii) How do exercise and Yoga strengthen the musculoskeletal system?

(iii) Is Ribcage an important part of the chest cavity? What makes this cage very flexible?

SECTION B(CHEMISTRY)

16. Priyanka wants to separate two photosynthetic pigment M and N from the plant extract. On using technique of paper chromatography, she could separate the two **1**

pigments. But she realized pigment M separated faster than pigment N. What is the possible reason for this?

- (A) Pigment M has low density
- (B) Pigment M has high density
- (C) Pigment M is less soluble in water
- (D) Pigment M has more temperature

17. Choose the process that does not involve heating? 1
 (A) Distillation (B) Filtration (C) Evaporation (D) Sublimation

18. Match the correct option from **column A** and **column B** 1

COLUMN A		COLUMN B	
i)	Different pigment of a flower	a)	Fractional distillation
ii)	Potassium chloride and ammonium chloride	b)	Filtration followed by evaporation
iii)	Common salt, water and sand	c)	Sublimation
iv)	Different gases from air	d)	Chromatography

- (A) i)-c, ii)-a, iii)-d, iv)-b
- (B) i)-d, ii)-c, iii)-b, iv)-a
- (C) i)-c, ii)-d, iii)-b, iv)-a
- (D) i)-d, ii)-a, iii)-d, iv)-b

19. Which of the following statements about heterogeneous mixtures are correct? 1
 (I) The composition is uniform throughout.
 (II) The components can be seen separately
 (III) The properties vary from one part to another
 (IV) Salt solution is an example

- (A) I and IV (B) II and III (C) I and II (D) III and IV

20. A student observes that a mixture appears uniform to the naked eye, but when a beam of light is passed through it, the path of light becomes visible. Which conclusion is most appropriate? 1

- (A) It is definitely a true solution
- (B) It is a suspension because its particles are large.
- (C) It is likely a colloid because colloidal particles scatter light.
- (D) It is a pure substance.

21. Rutherford's alpha particles scattering experiment resulted in the discovery of: 1
 (A) Electron (B) Atomic number (C) Nucleus in an atom (D) Neutron

22. Which of the following is the correct symbol of tungsten? 1
 (A) T (B) W (C) Tu (D) Tg

The following question consists of two statements – Assertion (A) and Reason (R).

Answer these questions by 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.

23. **Assertion(A):** Atom is electrically neutral 1
Reason(R): A positively charged particle, neutron is present in the nucleus of atom.
24. Three particles P, Q and R have the following properties: 2

PARTICLE	RELATIVE CHARGE	APPROXIMATE MASS
P	-1	Very small
Q	+1	Much greater than P
R	0	Nearly equal to Q

Identify P, Q and R and state where Q and R are mainly found in an atom.

25. Illustrate J.J Thomson’s model of an atom with a suitable diagram. Explain the arrangement of positive charge and electrons in this model. 3
26. A student dissolves 25 g of sodium chloride in 175 g of water. 3
(A) Calculate the percentage by mass of sodium chloride in the solution.
(B) How much sodium chloride should be added to make the concentration 20 % by mass, assuming no water is lost?

OR

A solution is prepared by dissolving 40 g of glucose in 160 g of water.

- (A) Calculate the mass of the solution and the concentration of glucose in the solution as percentage by mass.
- (B) Is the concentration greater than or less than 25%?
27. Case study question: 4
Three students make the following statements:
Aarav: “The K shell has more energy than the L shell because it is closer to the nucleus”.
Mehak: “An electron can move from one shell to another only by absorbing or releasing a fixed amount of energy”.
Kabir: “An electron continuously loses energy while moving in a permitted Bohr orbit.”
Answer the following:
(A) Which student has given the correct statement about the energy of shells?
(B) Find the corrections in Aarav’s statement.

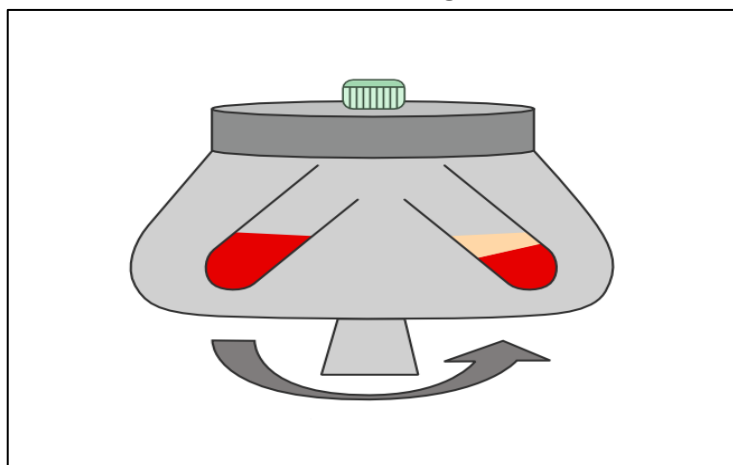
Attempt either subpart C or D.

- (C) Explain what happens when an electron moves from a higher energy level to a lower energy level?

OR

- (D) Explain why does an electron not continuously lose energy while present in a permitted shell?
28. A student prepares saturated solutions of potassium nitrate at 40°C and 80°C using 100 g of water. At 40°C , 64g of potassium nitrate dissolves, whereas at 80°C , 169 g dissolves. 5
- Answer the following:
- (A) Define saturated solution?
- (B) At what temperature is the solubility of potassium nitrate greater? Give a reason.
- (C) The saturated solution prepared at 80°C is cooled to 40°C . Calculate the mass of potassium nitrate that will crystallize out and why.
- (D) If the student uses 200 g of water instead of 100 g at 40°C , calculate the maximum mass of potassium nitrate that can dissolve to form a saturated solution.

OR



- (A) Name the separating technique shown in the above picture.
- (B) On what difference in physical property does this technique mainly depend?
- (C) How does the heavier component move differently from the lighter component during the above technique?
- (D) Give two other situations where above technique can be used for separation.

SECTION C (PHYSICS)

29. An object is moving with constant speed in a circular path. Which statement is correct? 1
- (A) Its velocity remains constant.
- (B) Its direction of motion changes continuously.
- (C) Its displacement increases uniformly in one direction.
- (D) It has no motion because its speed is constant.
30. Two students pull a rope in opposite directions. One applies a force of 75 N towards the east, while the other applies 100 N towards the west. The net force on the rope is: 1

- (A) 25 N east
- (B) 25 N west
- (C) 175 N west
- (D) 175 N east

The following question consists of two statements – **Assertion (A)** and **Reason (R)**. Answer these questions by 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.
31. **Assertion (A):** A person carrying a schoolbag on a level road at constant speed does no mechanical work on the bag in the direction of motion. 1
- Reason (R):** Work done by a force depends on the displacement in the direction of the force.
32. Give reasons for the following: 2
- (A) A loaded truck is harder to accelerate than an empty truck when the same force is applied.
 - (B) A rocket moves upward by expelling gases downward at high speed.
33. Attempt either option A or B. 2
- (A) A 20 kg box is moved from the ground to a platform 12 m above the ground. In one situation, the box is lifted vertically. In another situation, it is moved along an inclined plane of length 20 m to reach the same platform. Take $g = 10 \text{ m/s}^2$.
 - (i) Calculate the gravitational potential energy of the box at the top of the platform.
 - (ii) Determine the gravitational potential energy of the box when it reaches the same height through the inclined plane. Justify your answer.
- OR**
- (B) A car travelling on a highway reduces its speed to half when it approaches a busy junction. If the mass of the car remains unchanged, determine the ratio of its final kinetic energy to its initial kinetic energy.
34. A runner completes half a circular track of diameter 70 m and stops exactly opposite the starting point. 3
- (A) Calculate the distance travelled by the runner.
 - (B) Calculate the magnitude of the displacement.
 - (C) Based on the runner's journey, state one feature that distinguishes the two quantities calculated in parts A and B
35. A train starts from rest and accelerates uniformly at 0.5 m/s^2 for 20 s. It then moves at the speed attained for another 30 s. Calculate: 3
- (A) the speed of the train attained at the end of first 20 s.
 - (B) the distance covered during the acceleration phase
 - (C) the total distance travelled in 50 s.

36. For each of the following situations, identify whether the work done by the mentioned force is **positive, negative, or zero**. Give a suitable reason in each case. 3
- (A) A boy **pushes a box forward**, and the box moves in the direction of the applied force.
- (B) A **coolie carries a load horizontally** on his head at constant height. Consider the work done by the gravitational force.
- (C) A ball is thrown **vertically upward**. Consider the work done by the gravitational force while the ball is moving upward.

37. (A) State Newton's second law of motion. 3
- (B) Draw velocity-time graphs for an object on which no net force is acting.

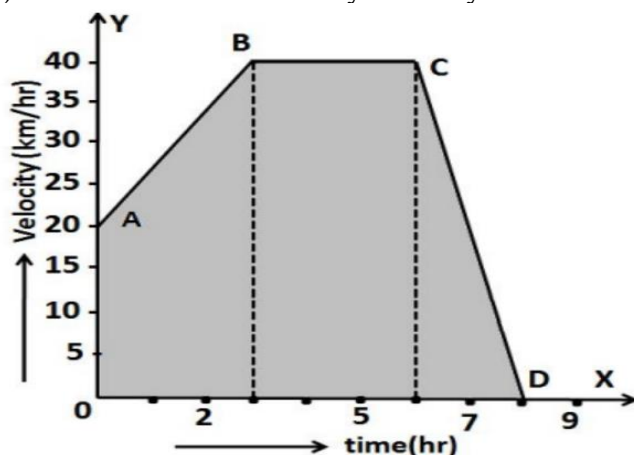
38. During a strength-training session, an athlete holds a metal rod with weights attached to both ends steadily above the ground. Each end carries a 12 kg mass, while the metal rod itself has a mass of 6 kg. The athlete keeps the loaded rod stationary for several seconds while maintaining the same position. 4
- (A) Name the two main forces acting on the loaded rod while it is being held stationary.
- (B) State whether these forces are balanced if the athlete keeps the loaded rod stationary. Justify.

Attempt either subpart C or D.

- (C) Calculate the gravitational force acting on the loaded rod. Take $g = 10 \text{ m/s}^2$

OR

- (D) Explain how the forces acting on the loaded rod differ when it is held stationary and when it is accelerated upward
39. The graph given below is the velocity-time graph for a moving body. Find 5
- (A) velocity of the body at point C
- (B) acceleration acting on the body between A and B
- (C) acceleration acting on the body between B and C.
- (D) total distance travelled by the body.



OR

The driver of train 'A' travelling at a speed of 54 kmh^{-1} applies brakes and retards the train uniformly. The train stops in 5 seconds. Another train 'B' is travelling on the

parallel track with a speed of 36 kmh^{-1} . Its driver applies the brakes and the train retards uniformly; train B stops in 10 seconds.

- (A) Plot speed-time graphs for both the trains on the same graph. (Graph paper not required.)
- (B) Find the distance travelled by train 'A' and train 'B' graphically.
- (C) Which of the two cars travelled farther after the brakes were applied and by how much?