



Delhi Public School, Howrah

PERIODIC ASSESSMENT II (2025-2026)

Class-IX

Care must be taken not to write anything on the question paper. All the questions must be attempted in the correct sequence.

Subject: - Science (Code No. 086)

Time: -3 Hours

F.M.-80

General Instructions:

- (i) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics.
- (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.

Section – A

Marks

1. During a school camping trip, some students drank water from a stream without boiling it. A few days later, several students fell ill with symptoms like vomiting and diarrhea. Which disease is most likely responsible for these symptoms? 1
 - A. Typhoid
 - B. Malaria
 - C. Influenza
 - D. Tuberculosis
2. If a plant is unable to bend toward sunlight, which tissue is most likely not functioning properly? 1
 - A. Parenchyma
 - B. Xylem
 - C. Phloem
 - D. Collenchyma
3. You are viewing a prepared slide of striated muscle fibres from cockroach leg. When you focus on the microscope, the striations appear pale and indistinct. To make the striations clearly visible, you would 1
 - A. slowly close the diaphragm to reduce the light.
 - B. remove the mirror to cut out light.
 - C. change the eyepiece to increase magnification.
 - D. replace the objective to decrease magnification.
4. Which of the following tissues would you expect in a place where friction is very high, like the soles of your feet? 1
 - A. Simple squamous epithelium
 - B. Ciliated epithelium
 - C. Stratified squamous epithelium
 - D. Columnar epithelium
5. Human cheek cells stained in methylene blue and mounted in glycerine were observed with the help of a compound microscope. The components of the cell which would be seen are: 1
 - A. cell wall, cytoplasm, nucleus.
 - B. plasma membrane, cytoplasm, nucleus.
 - C. plasma membrane, cytoplasm, nucleus, mitochondria.
 - D. cell wall, plasma membrane, cytoplasm, nucleus.

6. Match the following and choose the correct option.

1

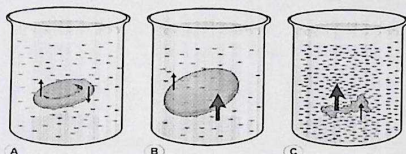
	Column I		Column II
a.	Cellulose	1.	Cytoplasm
b.	Chromosomes	2.	Functional segment of DNA
c.	Cell organelles	3.	Plant cell wall
d.	Genes	4.	Nucleus

- A. a-4, b-3, c-2, d-1
 B. a-3, b-4, c-1, d-2
 C. a-4, b-3, c-1, d-2
 D. a-3, b-4, c-2, d-1
7. Two individuals, Person A and Person B, are exposed to the same viral infection under similar conditions. While Person A recovers within a few days with mild symptoms, Person B develops severe complications and requires hospitalization. Which of the following is the most plausible scientific explanation for the differing outcomes?
- A. The virus mutated and lost its virulence only in Person A.
 B. Person A's immune response was more efficient in combating the infection.
 C. Person A consumed more antiviral medications than Person B.
 D. The virus selectively targets biologically weaker individuals like Person B.

1

The following two questions consist 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, but R is not the correct explanation of A.
 C. A is true but R is false.
 D. A is false but R is true.
8. **Assertion (A):** Mitochondria provide important intermediates for the synthesis of several biochemicals. **Reason (R):** Mitochondria are capable of self-duplication. 1
9. **Assertion (A):** Making anti-viral medicine is harder than making anti-bacterial medicines. **Reason (R):** It takes hundreds of years to prepare antiviral drugs. 1
10. A. In the following diagram, identify the type of solution in which each red blood cell is immersed. 2



B. What would be the change of observation if we placed an onion cell in beaker B?

11. Students to attempt either option A or B.

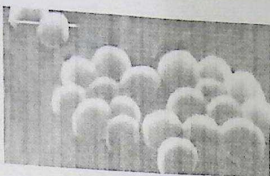
2

- A. (i) Social harmony and good economic conditions are necessary for good health. Justify the statement.
 (ii) Identify the scientists from the given image. What are they famous for?



OR

- B. (i) If two people have a cough, why might the doctor not give them the same medicine?
 (ii) Identify the microorganism from the given picture and write the diseased condition it can lead to in humans.



12. A. How does the point of entry of a microbe affect the organ it infects? Give two examples. 3
 B. In HIV, a minor gut infection can produce major diarrhea with blood loss. Why?
13. Compare the three types of simple permanent tissues in plants with respect to their structure and function. Also, support your answer with labelled diagrams. 3
14. **Read the passage and answer the following questions:** 4

Ravi visited a veterinary clinic with his injured pet dog. The vet explained that the dog's leg muscles were torn and needed rest. She also mentioned that ligaments were stretched. Meanwhile, an X-ray showed that bones were intact, and blood was clotting properly around the injured site. Ravi was curious to know how different tissues in the body played a role in the injury and healing process.



Attempt either subpart A or B.

- A. Which type of muscular tissue is most likely involved in the injury, and what is its main function? 3
OR
 B. What is the role of ligaments, and how do they differ from tendons?
 C. Which connective tissue helps in repairing tissues by supplying nutrients and oxygen at the injury site?
 D. Why do bones take longer to heal than muscle tissues, even though they are hard and protective?

15. Attempt either option A or B. 5

- A. (i) With the help of diagram show the main two types of cell division.
 (ii) Why do plant cells have more in number and big-sized vacuoles as compared to the animal cells?
 (iii) If the mitochondria of a muscle cell stop functioning, what immediate effect would you expect during physical activity?

OR

- B. (i) Describe how membrane bound cell organelles facilitate the transport of materials within a cell with the help of diagram.
 (ii) Why is endocytosis found in animals only?
 (iii) During a viral infection, the host cell is hijacked to produce viral proteins. Which organelles does the virus exploit to do this?

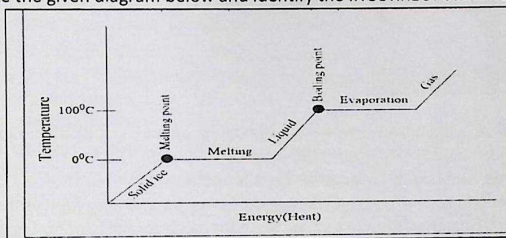
Section -B

Marks

16. In a compound two elements X and Y are present in 1:3 ratio. If the atomic mass of Y is 1u and molecular mass of the compound is 17u then calculate the atomic mass of element X? 1
 A. 12u
 B. 16u
 C. 14u
 D. 15u
17. A solution contains 20 g of sodium chloride dissolved in 180 g of water. Compute the (m/m) % of the solution.

- A. 11.11%
- B. 20%
- C. 9.09%
- D. 10%

18. A gas 'P' undergoes the process of liquefaction. Which of the followings gives INCORRECT information about 'P'? 1
- A. The kinetic energy of the particles of 'P' is decreased by lowering the temperature.
 - B. The particles of 'P' have very low kinetic energy before liquefaction.
 - C. The particles of 'P' are far apart with negligible forces.
 - D. When 'P' undergoes liquefaction the particle properties of 'P' changes.
19. Below there is four different sets of mixtures. Study it carefully and identify the set containing only homogeneous mixtures. 1
- A. Milk, Brass
 - B. Milk, Smoke
 - C. Air, Brass
 - D. Blood, Smoke
20. Determine the molecular mass of ethanol (C_2H_5OH). [Atomic mass of C=12u, O=16u, H=1u] 1
- A. 46u
 - B. 47u
 - C. 48u
 - D. 49u
21. Analyze the given diagram below and identify the INCORRECT statement from the following. 1



- A. Temperature remains constant during the process of melting.
 - B. At 100°C, only liquid state exists and above it only vapour state exists.
 - C. Below 0°C, only solid state exists.
 - D. Boiling starts when the temperature reaches at 100°C.
22. Determine the atomicity of ozone (O_3). 1
- A. 1
 - B. 2
 - C. 3
 - D. 4
23. The following question consists of two statements – Assertion (A) and Reason (R). Answer the question by selecting the appropriate option given below: 1
- A. Both A and R are true, and R is the correct explanation of A.
 - B. Both A and R are true, but R is not the correct explanation of A.
 - C. A is true but R is false.
 - D. A is false but R is true.

Assertion (A): Acetone evaporates faster compared to water.

Reason (R): The intermolecular force of attraction in acetone is stronger compared to the intermolecular force of attraction in water.

24. Calculate the percentage composition for each element in a compound which has the molecular formula N_2O_4 . [Given Atomic mass: N = 14, O = 16.] 2
25. Attempt either option A or B. (2+1)
- A. (i) In an experiment, 1.288g of copper oxide was obtained from 1.03 g of copper. In another experiment 3.672 g of copper oxide gave, on reduction, 2.938 g of copper. Show that the law of constant proportions is upheld in the above observations.

(ii) If 10 grams of CaCO_3 on heating gave 4.4g of CO_2 and 5.6g of CaO , prove that these observations align with the law of conservation of mass.

OR

B. (i) In a reaction, 5.3 gm of sodium carbonate reacted with 6 gm of ethanoic acid. The products were 2.2 gm of carbon dioxide, 0.9 gm water and 8.2 gm sodium ethanoate. Which law of chemical combination is obeyed here? Justify your answer with proper calculations.

(ii) Hydrogen and oxygen combine in the ratio of 1:8 by mass to form water. Calculate the mass of oxygen gas that will react completely with 3 gm of hydrogen gas?

26. A metal 'X' forms a chloride compound XCl_3 . Metal 'X' is a reactive metal and can react with many other nonmetals. It also forms compounds with various polyatomic ions. (1+2)

Answer the following questions based on the information given above:

A. What will be the valency of metal 'X' and chlorine respectively in the compound XCl_3 ?

B. Determine the chemical formula for the compounds of metal 'X' with sulphate ion and phosphate ion respectively.

27. A sealed container contains 500 mL of pure water at 25°C . The container is kept in a high-altitude research station where atmospheric pressure is significantly lower than sea level. When the container is heated, the water starts boiling at 85°C instead of 100°C . A scientist observes that despite lower temperature, the water is converting into steam. (1+1+2)

A. Why does the water boil at 85°C instead of 100°C at high altitude?

B. A sample of water under study was found to boil at 102°C at normal temperature and pressure. Why? Explain your answer with proper scientific reason.

OR

Name any two factors other than atmospheric pressure that affects the boiling point of a liquid.

C. Describe the role of intermolecular forces during the change of state from liquid to gas.

28. Attempt either option A or B.

A. A student of class IX conducted an experiment to separate three different mixtures labelled as 'P', 'Q' and 'R' using filtration. She passed all the three mixtures through filter paper separately. After the experiment she noted down her observations as shown below: (3+2)

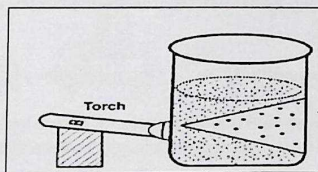
Mixture	Observation on Filter Paper	Observation in Filtrate
P	No residue	Clear liquid
Q	Fine particles partially retained	Cloudy liquid
R	Solid particles fully retained	Clear liquid

(i) Identify 'P', 'Q' and 'R' as solution, suspension or colloid. Justify your answer with proper scientific reasons.

(ii) Which of these mixtures can show Tyndall effect and why?

OR

B. There is an unknown mixture 'X' kept inside a container. In an experiment mixture 'X' shows the following feature: (1+2+2)



(i) Identify the feature that is shown in the diagram. Also classify 'X' as homogeneous or heterogeneous mixture.

(ii) What conclusions can you draw about the particles of 'X' from the above observation? Explain your answer with proper scientific reasons.

(iii) 'X' was left undisturbed for 30 minutes and continued to show similar type of observation. However, another mixture 'Y' initially showed a similar observation, but after being left undisturbed for 30 minutes it

no longer displayed this behaviour. What is the reason behind this difference in observations? Explain your answer.

Section –C

Marks

29. Two planets have the same average density but their radii are R_1 and R_2 . If acceleration due to gravity on these planets be g_1 and g_2 respectively, then- 1

A. $\frac{g_1}{g_2} = \frac{R_1}{R_2}$ B. $\frac{g_1}{g_2} = \frac{R_2}{R_1}$

C. $\frac{g_1}{g_2} = \frac{R_1^2}{R_2^2}$ D. $\frac{g_1}{g_2} = \frac{R_1^3}{R_2^3}$

30. The minute hand of a clock is 4 cm long. The average velocity of the tip of the minute hand between 11:00 am to 11:30 am is- 1

- A. 1.5×10^{-5} m/s
B. 4.4×10^{-5} m/s
C. 1.8×10^{-6} m/s
D. 3.5×10^{-6} m/s

31. The following question consists of two statements – Assertion (A) and Reason (R). Answer the question by selecting the appropriate option given below: 1

- A. Both A and R are true, and R is the correct explanation of A.
B. Both A and R are true, but R is not the correct explanation of A.
C. A is true but R is false.
D. A is false but R is true.

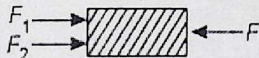
Assertion (A): In uniform circular motion the speed of the object doesn't change.

Reason(R): Centripetal force is responsible for changing the direction and magnitude of the speed.

32. If the volume of 50 g of a substance is 20 cm³ and the density of water is 1 g/cm³, will the substance float or sink? Why? 2

33. A. Why is Newton's first law of motion also called law of inertia? 2

- B. What should be the value of F in the following, to balance the effect of F_1 and F_2 ?



34. Attempt either option A or B. (1+1)

A. Give reason for the following:

- (i) A javelin thrower is marked foul if he crosses over the line marked for throw. Still athletes often fail to stop themselves before the line.
(ii) A stone tied to a string is whirling in a horizontal circle. If the string breaks, the stone flies away tangentially.

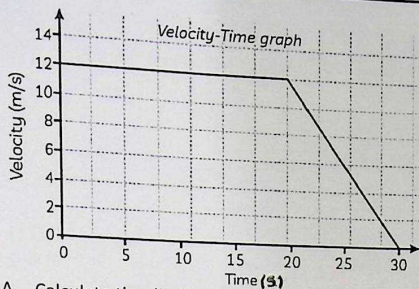
OR

B. (i) A ball of mass 100 g moving with a velocity 10 ms⁻¹ is stopped by a boy in 0.2 s. Calculate the force applied by the boy to stop the ball.

(ii) A stone is thrown in a vertically upward direction with a velocity of 5 m s⁻¹. If the acceleration of the stone during its motion is 10 m s⁻² in the downward direction, what will be the maximum height attained by the stone?

35. **Read the following passage and answer the questions based on the informations provided.** 3

Ritesh was driving car to his office. Suddenly he saw a big stone lying on the road, he applied brakes to avoid any kind of accident, and the car came to at rest. The whole scenario was observed by Sita, and she drew the velocity-time graph regarding the situation.



- A. Calculate the displacement of the car after 20 seconds?
- B. After deceleration, how far does the car go?
- C. Describe the motion of the car from 0 s to 30 s.

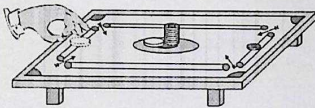
36. What happens to the gravitational force between two objects, if
- A. The mass of one object is doubled?
 - B. The distance between the objects is doubled and tripled?
 - C. The masses of both objects are doubled?
- Show proper calculations for each case.

3

37. Read the given passage and answer the following questions.

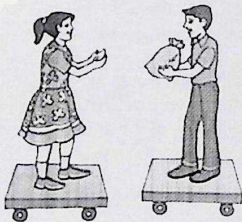
3

While playing carrom, the coins on a carrom board are arranged vertically. Aditya observed that a fast-moving striker strikes a pile of carrom coins and only the bottom coin gets removed and the vertical arrangements of the coins remain intact.

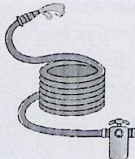


- A. Which law best describes the given situation?
 - B. What is the reason that only the bottom coin is removed, and the rest of the coins do not fall?
 - C. What is the momentum of a body of mass $2m$ and velocity $v/2$?
38. A. Two friends on roller skates are standing apart facing each other. One of them throws a bag full of sand towards the other, who catches it. How will this activity affect the position of the two? Explain your answer.

(1+1+2)



- B. Water sprinkler used for grass lawns begins to rotate as soon as the water is supplied. Explain the principle on which it works.



Attempt either subpart C or D.

- C. A stone dropped from a window reaches the ground in 0.5 seconds (given $g = 10 \text{ ms}^{-2}$).
- Calculate the speed just before it hits the ground.
 - What is the average speed at $t = 0.5 \text{ s}$?

OR

- D. A ball thrown up vertically returns to the thrower after 6 s. Find
- the velocity with which it was thrown up.
 - the maximum height it reaches.

39. Attempt either option A or B.

(2+1+2)

A school picnic was organized at Fateh Sagar Lake, Udaipur. Children were allowed to take boat rides. All types of boats were seen at the lake like small boats, cruise ships and many more. Shilpa found that boats were floating on water where she saw instructions on board that "Only 8 people are allowed to go on boat ride". She got confused.

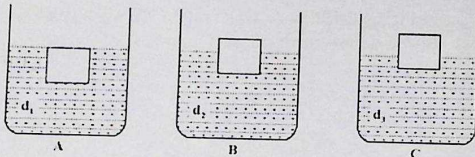


- A. (i) How boats float on water? Give reason for your answer.
(ii) Will there be any change in the water level near the boat as people start sitting?
(iii) A cube of side 5cm is immersed in water and then in saturated salt solution. In which case, will it experience a greater buoyant force? If each side of the cube is reduced to 4cm and then immersed in water, what will be the effect on the buoyant force experienced by the cube as compared to the first case for water?

OR

- B. (i) The following figure shows three identical blocks of wood floating in three different liquids having three different densities respectively. Which of these has the highest density? Give reason to justify your answer.

(2+2+1)



- (ii) An object of mass 500 g is immersed into a measuring jar containing water. The initial level of water in the measuring jar is 50cc. Due to the immersion of the object, the water level in the measuring jar reaches 100cc. Calculate the mass of the water displaced due to the immersion of the object.
(iii) When we jump into the swimming pool, why do we feel lighter? Explain in your own words.