B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

TERM-1 EXAMINATION (2025-26)
SCIENCE (086)

Class: IX **Time: 3 hours**
Date: 08.09.25 **Max Marks: 80**
Admission no: **Roll no:**

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 BIOLOGY

1. Which of the following cell organelles is known as the 'powerhouse of the cell'? 1
   (a) Nucleus (b) Mitochondria (c) Endoplasmic Reticulum (d) Golgi apparatus
2. The cell wall of plant cells is mainly composed of: 1
   (a) Protein (b) Cellulose (c) Chitin (d) Starch
3. Which of these cell organelles is found only in plant cells? 1
   (a) Lysosome (b) Chloroplast (c) Ribosome (d) Mitochondria
4. Which among the following is a permanent tissue in plants? 1
   (a) Parenchyma (b) Collenchyma (c) Xylem (d) Meristematic tissue
5. Which type of epithelial tissue forms the inner lining of the blood vessels? 1
   (a) Cuboidal epithelium (b) Columnar epithelium
   (c) Ciliated epithelium (d) Squamous epithelium
6. Which tissue helps in the transport of water in plants? 1
   (a) Phloem (b) Parenchyma (c) Xylem (d) Collenchyma
7. A group of similar cells performing a specific function is called: 1
   (a) Organ (b) Organ system (c) Tissue (d) Organism

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, 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.

8. **Assertion (A):** The nucleus controls all activities of the cell.
   Reason (R): The nucleus contains DNA which has hereditary information. 1
9. **Assertion (A):** Collenchyma provides flexibility to plant parts.
   Reason (R): Collenchyma cells have thick lignified walls. 1
10. Why the cell is called the structural and functional unit of life? 2
11. *Students to attempt either option A or B.*
    (A) State two functions of the nucleus in a cell.

OR

(B) Differentiate between diffusion and osmosis. 2

12. Name the two types of plant tissues and give one example of each. 2
13. What are plastids? Name its different types. 3
14. Describe the structure and function of xylem tissue. 3
15. Read the passage and answer the questions that follow: 4

Ravi observed a green plant under a microscope and noticed that its cells had a well-defined boundary, a nucleus, and some green structures. He also prepared a section of a plant stem and observed that some tissues had thick corners, while others had narrow and thin-walled cells arranged loosely.

Answer the following:

(a) What is the well-defined boundary of a plant cell called?

(b) What are the green structures observed in the cells?

(c) Name the plant tissue with thickened corners. State its function.

OR

Identify the plant tissue made of thin-walled loosely arranged cells. Write its function.

16. Attempt either option A or B. 5

A. Describe any five differences between plant and animal cells.

OR

B. Explain the structure and functions of the plasma membrane. Why is it called selectively permeable? Support your answer with an example.

Section-B Chemistry

17. Which of the following is NOT a state of matter? 1
(a) Solid (b) Liquid (c) Gas (d) Light

18. The process of a substance changing directly from a solid to a gas is called: 1
(a) Melting (b) Freezing (c) Sublimation (d) Condensation
19. Which of the following factors affects the rate of evaporation? 1
(a) Temperature (b) Surface area (c) Humidity (d) All of the above
20. Which of the following is not a pure substance? 1
(a) Water (b) Air (c) Diamond (d) Gold
21. What is the boiling point of pure water at standard atmospheric pressure? 1
(a) 100°C (b) 0°C (c) 212°F (d) 373 K
22. Which of the following is a homogeneous mixture? 1
(a) Orange juice with pulp (b) Sand and water (c) Saltwater (d) Oil and vinegar
23. Which of the following mixtures exhibits Tyndall effect? 1

(a) True Solution (b) Colloidal Solution (c) Suspension (d) Both b) and c)

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24. **Assertion (A):** A solution of table salt in a glass of water is homogeneous.

Reason (R): A solution having a different composition throughout is homogeneous. 1

25. Convert the following temperatures to the Kelvin scale.

(a) 37 ^{0}C (b) 145 ^{0}C 2

26. **Attempt either option A or B.** 3

(A) (i) What are the two components of the solution?

(ii) Write any two properties of the solution.

OR

(B) (i) Define concentration of a solution.
(ii) Explain the Tyndall effect.
(iii) What are heterogeneous mixtures?

27. Give reasons 3

(a) A wooden table should be called a solid.
(b) We can get the smell of perfume sitting several metres away.
(c) Water at room temperature is a liquid.

28. In a chemistry lab, students are observing dry ice (solid carbon dioxide). One student notices that it directly changes into a gaseous state without becoming liquid. The teacher explains this process and compares it with camphor burning, which also seems to disappear without leaving any liquid behind. This led to a discussion on conditions under which substances change their state. 4

(i) What is the name of the process by which dry ice changes directly into a gas? (1)
(ii) What condition of pressure is usually required for sublimation? (1)
(iii) How can knowledge of sublimation be applied in daily life or industries? (2)

OR

(iii) Name two more substances (other than dry ice and camphor) that undergoes the same type of change.

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

(A) i) Differentiate between mixtures and compounds.

(ii) Classify the following as chemical or physical changes:

(a) Cutting of trees
(b) Melting of butter in a pan
(c) Rusting of almirah
(d) Dissolving sugar in water
(e) Digestion of food
(f) Burning of wood

OR

(B) (i) A solution contains 60 g of sugar in 480 g of water. Calculate the concentration in terms of mass by mass percentage of the solution.

(ii) Explain the physical properties of metals.

Section-C Physics

30. Which of the following statements is correct regarding inertia? 1

(a). It is the force required to move an object.

(b). It is the tendency of a body to resist a change in its state of motion or rest.

(c). It depends on the speed of the object.

(d). It is the force that changes the direction of a moving object.

31. The weight of an object is: 1

(a). Equal at all places

(b). Always greater than its mass

(c). A force acting on the object due to gravity

(d). Never changes with location

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32. **Assertion (A):** Weight and mass are the same physical quantity.
Reason (R): Weight is the force with which Earth attracts a body. 1

33. State the universal law of gravitation. Write its mathematical formula. 2

34. (A) Differentiate between distance and displacement.(At least two differences) 2

OR

(B) A body starts from rest and gains a velocity of 20 m/s in 4 seconds. Find the acceleration and distance covered.

35. Draw the velocity-time graph for an object moving with uniform acceleration. Also explain how to calculate distance using this graph. 3

36. A truck of mass 3000 kg moving with a velocity of 90 km/h is brought to rest in 20 seconds. Calculate: 3

(i) the acceleration,
(ii) the unbalanced force acting on the truck,
(iii) the distance travelled during retardation.

37. What is the difference between mass and weight? Write one example each. 3

38. **Read the passage below and answer the questions:** **4**

During a tug-of-war match, both teams apply force on the rope. For a long time, neither of the teams is able to move the rope. Finally, Team A pulls harder and the rope moves in their direction.

Questions:

(i) What kind of forces were acting on the rope when it was not moving? (1)
(ii) What kind of force was applied when Team A won? (1)
(iii) Which law of motion helps us understand the motion of the rope? Write the statement of the law. (2)

OR

(iv) Define unbalanced force with an example from the above case.

39. (A) (i) Write the three equations of motion. 5

(ii) A train starting from rest attains a velocity of 72 km/h in 5 minutes. If the acceleration is uniform, find (a) the acceleration, (b) the distance travelled by the train in this time.

OR

(B) A car is moving with a velocity of 20 m/s. It is stopped in 5 seconds by applying brakes. Calculate:

(i) The retardation,
(ii) The distance covered before coming to rest.

Also draw a velocity-time graph for this motion.

----------ALL THE BEST----------