



BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY| CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL
MID TERM EXAMINATION 2024-25
SCIENCE (086)



Class: IX

DATE: 25.09.24

Name:

Duration: 3 Hrs.

Max. Marks: 80

Exam R. No.

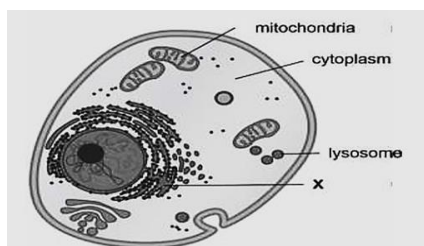
General Instructions:

- i This question paper consists of 39 questions. All questions are compulsory.
- ii Question paper is divided into five sections viz. A, B, C, D and E.
- iii Section A – question numbers 1-16 are multiple choice questions and 17-20 are assertion & reason, carrying 1 mark each.
- iv Section B – question numbers 21-26 are Very short Answer type questions carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v Section C – question numbers 27-33 are short Answer type questions carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi Section D – question numbers 34-36 are Long Answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.
- vii Section E – question numbers 37-39 are 3 Case Based units of assessment having 4 questions carrying 1 or 2 marks each.
- viii There is no overall choice. However, an internal choice has been provided in some questions. A student is expected to attempt only one of these questions.

Section–A

(Select and write one most appropriate option out of the four options given for each of the questions 1-20 of 1 mark each)

1. Name the process by which water moves through a semipermeable membrane from a region of high concentration to a region of lower concentration, thereby equalizing water concentration. 1
(a) Diffusion (b) Evaporation
(c) Osmosis (d) Humidity
2. The diagram shows an animal cell with some of its organelles. Identify X. 1



- (a) Vacuole (b) Golgi apparatus
(c) Nucleolus (d) Endoplasmic reticulum
3. Why do cells of apical meristem lack vacuoles? 1
(a) They store food materials. (b) They have thin cell walls.
(c) They contain dense cytoplasm. (d) They are actively dividing cells.

4. Which of the following tissues has dead cells? 1
 (a) Parenchyma (b) Sclerenchyma
 (c) Collenchyma (d) Epithelial tissue
5. The muscular tissue which function throughout life continuously without fatigue is 1
 (a) Skeletal muscle (b) cardiac muscle
 (c) Smooth muscle (d) voluntary muscle
6. Which of the following is not a characteristic of solid? 1
 (a) High density (b) Regular shape
 (c) High compressibility (d) High rigidity
7. In all the three states of water, (i.e. ice, liquid and vapour) chemical composition of water 1
 (a) is very different (b) remains same
 (c) Sometimes same and sometimes different (d) none of the above
8. The process in which solid is directly converted to vapours state is called _____ 1
 (a) Vapourisation (b) solidification
 (c) Condensation (d) sublimation
9. The property of a substance to be hammered into thin sheets is called: 1
 (a) Ductility (b) Malleability
 (c) Solubility (d) Viscosity
10. An example of liquid metal and liquid non-metal is: 1
 (a) Gallium, mercury (b) Mercury, chlorine
 (c) Mercury, bromine (d) Bromine, sulphur
11. Which of the statements is incorrect about the physical change? 1
 (a) There is no gain or loss of energy. (b) It is permanent and Irreversible
 (c) Composition of the substance remains the same (d) No new substance is formed.
12. Which of the following is a chemical change? 1
 (a) Boiling water (b) Dissolving sugar in water
 (c) Digesting food (d) Cutting paper
13. The odometer of a car reads 2200 km at the start of a trip and 2400 km at the end of the trip. If the trip took 5 h, calculate the average speed of the car in km/h. 1
 (a) 40 km/h (b) 5.5 km/h
 (c) 2.4 km/h (d) None of these
14. SI unit of G (Universal gravitational constant) is 1
 (a) m/ (b) km/h
 (c) Nm²/kg² (d) none of these
15. You fall in the forward direction when a moving bus brakes to a stop. It is due to: 1
 (a) Inertia of rest (b) Inertia of motion
 (c) Inertia of direction (d) none of these
16. What is the momentum of an object of mass **m**, moving with a velocity **v**? 1
 (a) $(mv) / 2$ (b) mv^2
 (c) $\frac{1}{2} mv^2$ (d) mv

Directions: In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

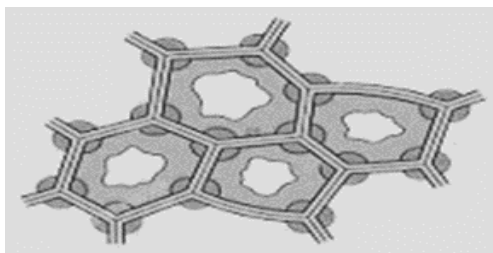
- (a) Both assertion and reason are true and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (c) Assertion is true but reason is false.
- (d) Both Assertion and Reason are false.

17. **Assertion (A):** When a bullet is fired from the gun, the gun recoils backward. 1
Reason (R): This is because of Newton's 3rd law of motion.
18. **Assertion (A):** Uniform circular motion is called Accelerated motion. 1
Reason (R): This is because of the change in velocity of an object when it moves in a circular path.
19. **Assertion (A):** Water and carbon dioxide are known as compounds. 1
Reason (R): Water and carbon dioxide are heterogeneous in nature.
20. **Assertion (A):** Plastids contain the pigment chlorophyll known as chloroplasts. 1
Reason (R): Chloroplasts are not important for photosynthesis in plants.

Section-B

(Q.no.21-26 are very short answer questions of 2 marks each)

21. Which type of cell division is required for growth and repair of the body and which type is involved in formation of gametes? Write a difference between them. 2
- 22.



- a) Identify the tissue given below. 2
- b) Mention its characteristic features.
- c) Specify the main function of this tissue.
- d) Name any one part of the plant where these cells are present.
23. Define Average speed. Write an SI unit of Average speed. 2
24. Draw the velocity-time graphs for uniform motion and non-uniform accelerated motion. 2
25. Convert the following temperature to Kelvin scale. 2
(a) 54° C (b) 197° C
26. Draw a labelled diagram of a neuron. 2
- OR
- Identify the type of tissue in the following :
- a) Skin b) Vascular bundle c) bone d) Lining of kidney tubule 2

Section– C

(Q.no.27-33 are short answer questions of 3 marks each)

27. A 8000 kg engine pulls a train of 5 wagons, each of 2000 kg, along a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate:
(a) the net accelerating force and (b) the acceleration of the train. 3
28. Rahul, while driving to school, computes the average speed for his trip to be 20 km h⁻¹. On his return trip along the same route, there is less traffic and the average speed is 30 km h⁻¹. What is the average speed for Rahul's trip? 3
29. State Newton's law of Gravitation. Prove that $F = G \frac{Mm}{d^2}$ 3
30. Give reason: 3
- a) Vacuoles are storage sacs.
 - b) Lysosomes are known as the suicide bags of a cell.
 - c) If a potted plant is covered with a glass jar, water vapours appear on the wall of the glass jar.
31. Differentiate between striated, unstriated and cardiac muscles on the basis of their structure and Site/location in the body. 3
32. (a) Arrange the following substances in increasing order of forces of attraction between the particles-- water, nitrogen, sugar 3
- (b) Give two reasons to justify-
 - i) Water at room temperature is a liquid.
 - ii) An iron almirah is a solid at room temperature
33. (a) Define concentration of a solution. 3
- (b) A solution contains 20 g of sugar in 220g of water. Calculate the concentration in terms of mass by mass percentage of the solution.

OR

What is a suspension? Write any four properties of a suspension 3

Section– D

(Q.no.34-36 are Long answer questions of 5 marks each)

34. a)What are the components of blood? 1
- b) How are bones different from cartilage? Write their function. 2
 - c) Where are fats stored in our body? How it is useful? 2
- OR
- a)What is the function of stratified squamous epithelium? 1
 - b) Differentiate between ciliated columnar epithelium and cuboidal epithelium. 2
 - c) What are Tendons and areolar tissue? 2
35. (a) Name the dispersed phase and dispersing medium in the following. 2
- i) Gel
 - ii) Milk of magnesia
- (b) What are alloys? What are the compositions of brass alloy? 2
 - (c) What are the components of tincture of iodine? 1
- OR
- (a)Write the points of comparison between physical and chemical changes. 3
 - (b)Explain the types of mixtures with suitable examples. 2

36. (i) State Newton's third law of motion . Write its two applications. 3
(ii) Explain the terms Action and reaction involved in Newton's third law of motion. 2

OR

- (i) State Newton's second law of motion. Write its two applications. 3
(ii) Prove that $F = m \times a$ 2

Section–E

(Q.no.37-39 are case based questions of 4 marks each)

37. Read the passage and: answer the following questions

Nucleus is the prominent organelle present in the cell which is the controlling centre of all activities of the cell. It is covered by a nuclear membrane. The nuclear membrane allows the transfer of material from inside the nucleus to its outside. The nucleus plays a central role in cellular reproduction.

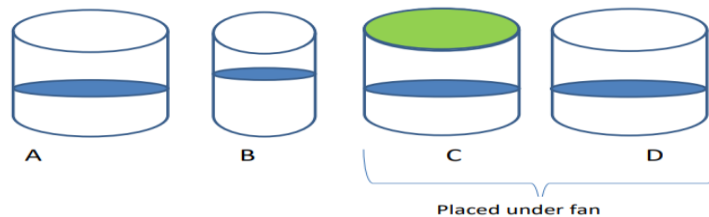
- a) What is DNA? 1
b) Define gene. 1
c) Who discovered the nucleus? What are chromosomes made up of? 2

OR

- c) Differentiate between prokaryotic and eukaryotic cells. 2

38. Read the information given below and answer the following questions.

100 ml of water was placed in four vessels A, B, C, D. Vessel C, A and D are of same size, B is smaller. Vessel C is covered and C and D are placed under the fan as shown.



- a) In how many beakers, water will escape into the atmosphere as vapours? 1
b) What name is given to the process of escaping of water from liquid to vapour state? 1
c) After one hour from the beginning of the experiment the water level will fall to the maximum in which of the beakers and why? 2

OR

- c) What happens in beaker C? 2

39. Read the passage and: answer the following questions

The mass of an object is the measure of its inertia. We have also learnt that greater the mass, the greater is the inertia. It remains the same whether the object is on the earth, the moon or even in outer space. Thus, the mass of an object is constant and does not change from place to place.

Whereas the earth attracts every object with a certain force and this force depends on the mass (m) of the object and the acceleration due to the gravity (g). The weight of an object is the force with which it is attracted towards the earth. We know that $F = m \times a$, that is, $F = m \times g$

- (a) If the mass of an object on the surface of earth is 45 kg. What would be its mass on surface of moon 1
(b) What are the differences between the mass of an object and its weight? 1
(c) Mass of an object is 10 kg. What is its weight on the earth? 2

OR

- (c) An object weighs 10 N when measured on the surface of the earth. What would be its weight? when measured on the surface of the moon? 2

xxxxx BEST OF LUCK xxxxx