केन्द्रीय विद्यालय संगठन, कोलकाता संभाग

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सत्रांत परीक्षा/SESSION ENDING EXAM. – 2025-26

कक्षा/CLASS-IX

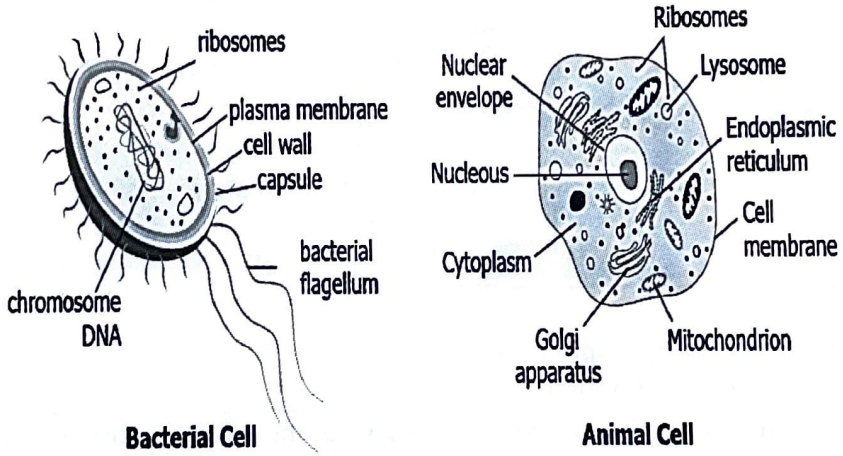
अधिकतम अंक/MAX. MARKS-80

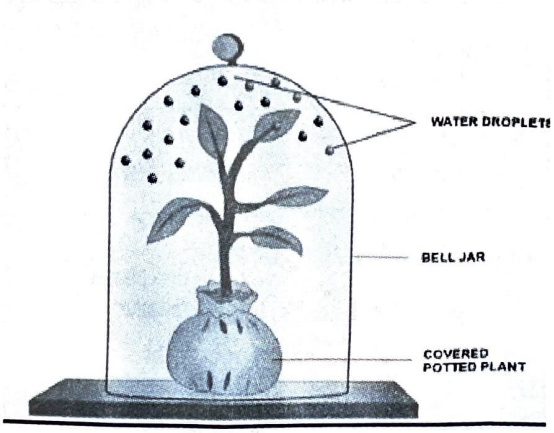
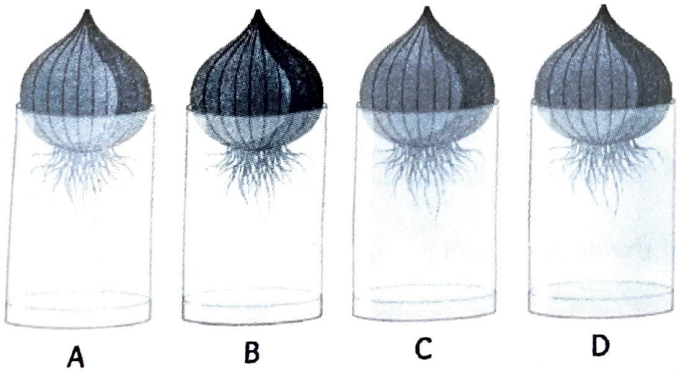
समय/TIME-03 घंटे/Hours

विषय/SUB.-विज्ञान / SCIENCE (086)

General Instructions:

1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

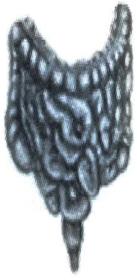
Q.NO.	SECTION A	MARKS
1	The image shows a bacterial cell and an animal cell.  **Bacterial Cell** **Animal Cell** Based on the structures, a student claims that the animal cell contains complex structures that are absent in the bacterial cell. Which statement can the student make to support the claim? (a)Animal cell contains flagella that aids in locomotion that is absent in case of a bacterial cell. (b)Nuclear material of the bacterial cell is not enclosed in a nuclear envelope as in case of an animal cell. (c)Cytoplasmic content of the bacterial cell is not enclosed in a thick cell wall as in case of an animal cell. (d)Animal cell contains ribosomes spread across the cell whereas in case of bacterial cell they are clumped together.	1
2	Find out the false sentences (a) Golgi apparatus is involved with the formation of lysosomes (b) Nucleus, mitochondria and plastid have DNA; hence they are able to make their own structural proteins (c) Mitochondria is said to be the power house of the cell as ATP is generated in	1

	them. (d) Cytoplasm is called as protoplasm	
3	A large amount of energy is required by the cell to carry out various cellular processes. Which part of mitochondria helps generate enough energy required for various chemical activities and how? (a)The folds present in the inner mitochondrial membrane decrease the surface area for more ATP production. (b)The folds present in the inner mitochondrial membrane increase the surface area for more ATP production. (c)The folds present in the outer mitochondrial membrane increase the surface area for more ATP production. (d) The folds present in the outer mitochondrial membrane decrease the surface area	1
4	What causes the droplets of water to accumulate on the inner walls of the bell jar?  (a) Photosynthesis (b) Respiration. (c) Transpiration (d) Combustion	1
5	A student did an experiment to study the role of meristematic tissue in onion roots. For the experiment, an onion was kept in each of the four glasses that were filled with same amount of water.  The student measures the length of the roots in all the glasses on day 3. The student then cuts about a1 cm of the onion roots in glass B, C, and D every next day and measures the length of the root on day 10. The table shows the result of the experiment.	1

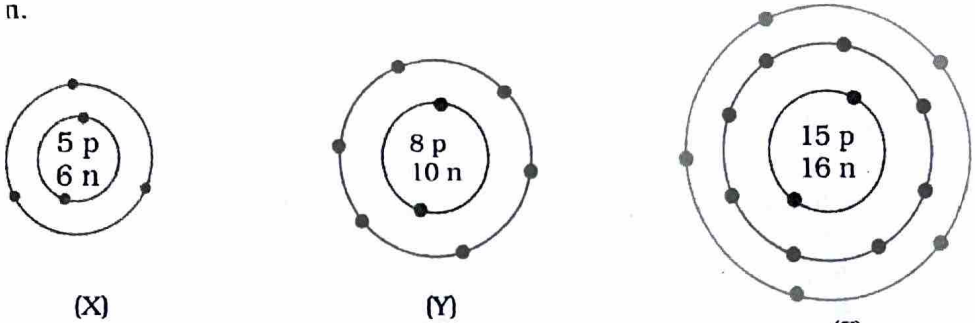
Glass	Root Length Day 3(cm)	Day on which Onion was Root Cut	Length of the Root on Day 10(cm)
A	2.0	---	6.0
B	2.0	Day 4	1.0
C	2.0	Day 5	3.5
D	2.0	Day 6	5.0

What can the student conclude from the experiment?
(a) Roots develop meristematic tissue again when cut.
(b) Roots grow faster after meristematic tissue is removed.
(c) Roots stops growing when meristematic tissue is removed.
(d) Roots with and without meristematic tissue had same growth.

6	While doing work and running, you move your organs like hands, legs etc. Which among the following is correct? (a) Smooth muscles contract and pull the ligament to move the bones (b) Smooth muscles contract and pull the tendons to move the bones (c) Skeletal muscles contract and pull the ligament to move the bones (d) Skeletal muscles contract and pull the tendon to move the bones	1
7	Find out the correct sentence about manure (i) Manure contains large quantities of organic matter and small quantities of nutrients. (ii) It increases the water holding capacity of sandy soil. (iii) It helps in draining out of excess of water from clayey soil. (iv) Its excessive use pollutes environment because it is made of animal excretory waste. (a) (i) and (iii) (b) (i) and (ii) (c) (ii) and (iii) (d) (iii) and (iv)	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, 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): RBC burst when placed in hypotonic solution. Reason (R):RBC burst due to exosmosis.	1
9	Assertion(A): Cork cells are impervious to water and gases. Reason(R): Cork has suberin deposits that are water proof.	1
10	If you are provided with some vegetables to cook. You generally add salt into the vegetables during cooking process. After adding salt, vegetables release water. What mechanism is responsible for this? And define that process. **OR**	2

	How is endoplasmic reticulum important for membrane biogenesis?	
11	If there is low rainfall in a village throughout the year, what measures will you suggest to the farmers for better cropping?	2
12	Give reasons for (a)We get a crunchy and granular feeling, when we chew pear fruit. (b) Branches of a tree move and bend freely in high wind velocity. (c) It is difficult to pull out the husk of a coconut tree.	3
13	Differentiate between the following (i) Capture fishery and Culture fishery (ii)Mixed cropping and Inter cropping (iii) Bee keeping and Poultry farming	3
14	In brief state what happens when (a) dry apricots are left for sometime in pure water and later transferred to sugar solution? (b) a Red Blood Cell is kept in concentrated saline solution? (c) the Plasma-membrane of a cell breaks down? (d) rheo leaves are boiled in water first and then a drop of sugar syrup is put on it? (e) golgi apparatus is removed from the cell?	5
15	Muscular tissue is essential for movement in our bodies and consists of elongated cells called muscle fibres. This tissue is broadly classified based on its structure, function, and location into three main types. Some muscles we can consciously control, like those in our arms and legs, while others work automatically without our thought, such as those that manage food movement in the alimentary canal. The heart also has a unique muscular tissue that contracts and relaxes rhythmically throughout life to pump blood.    (i)Skeletal muscles are also known as "striated muscles" and "voluntary muscles". What feature gives them their striated appearance? (ii)The muscle present in legs is different from that of muscle present in small intestine. Justify your answer. (iii)Which specific feature is present in cardiac muscles ?	4
	SECTION B	
16	An atom with 3 protons and 4 neutrons will have a valency of - (a) 3(b) 7 (c)1 (d)4	1
17	The number of neutrons present in $_{11}Na$ & and $_{12}Mg$ is: (a) 11 and 11 respectively(b) 12 and 12 respectively	1

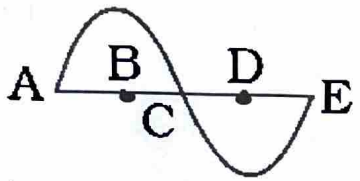
	(c) 11 and 12 respectively(d) 12 and 11 respectively	
18	Chemical formula of calcium phosphate is : (a) $CaPO_4$(b) Ca_2PO_4(c) $(CaPO_4)_3$(d) $Ca_3(PO_4)_2$	1
19	5. Carbon and oxygen combine to form carbondioxide. What is the ratio of carbon and oxygen by, mass? 1 (a) 1:2(b) 3:8(c) 2:1(d) 8:3	1
20	Two substances, A and B were made to react to form a third substance, A_2B according to the following reaction $2\ A + B \rightarrow A_2\ B$ Which of the following statements concerning this reaction are incorrect? (i) The product A_2B shows the properties of substances A and B (ii) The product will always have a fixed composition (iii)The product so formed cannot be classified as a compound (iv) The product so formed is an element (a) (i), (ii) and (iii), (b) (ii), (iii) and (iv) (c) (i), (iii) and (iv) (d) (ii), (iii) and (iv)	1
21	In which of the following conditions, the distance between the molecules of hydrogen gas would increase? (i) Increasing pressure on hydrogen contained in a closed container (ii) Some hydrogen gas leaking out of the container (iii) Increasing the volume of the container of hydrogen gas (iv) Adding more hydrogen gas to the container without increasing the volume of the container (a) (i) and (iii) (b) (i) and (iv) (c) (ii) and (iii) (d) (ii) and (iv)	1
22	On converting 25°C, 38°C and 66°C to kelvin scale, the correct sequence of temperature will be (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	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, 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): Na, K, Ca, Mg are metals because they can lose electrons to form positive ions. Reason(R): F, Cl, P, O are non-metals because they too can gain electronsto form positive ions.	1
24	(i)What happens when dry ice is heated? (ii)Name the phenomenon in change in state.	2
25	(i)One electron is present in the outer most shell of the atom of an element X. What would be the nature and value of charge on the ion formed if this electron is removed from the outer most shell? (ii)Define ion.	3

26	What information do you get from the Fig. 4.4 about the atomic number, mass number and valency of atoms X, Y and Z? Give your answer in a tabular form. n.  (X) (Y) (Z)	3
27	During a chemistry practical, a student heated copper powder in a closed container. After the reaction, the mass of the container and its contents was found to be the same as before heating. (a) Name the law illustrated by this observation. (b) State the law. (c) Why is balancing of chemical equations necessary? (d) What would happen to the mass if the container were open? Explain.	5
28	Milk is actually a mixture of water, fat, proteins etc. When a scientist says that something is pure, it means that all the constituent particles of that substance are the same in their chemical nature. A pure substance consists of a single type of particles. The elements and compounds comes under the pure substances. As we look around, we can see that most of the matter around us exist as mixtures of two or more pure components, for example, sea water, minerals, soil etc. are all mixtures.Depending upon the nature of the components that form a mixture, we can have different types of mixtures; homogeneous and heterogeneous mixture. (i) Shikha crushed a piece of chalk and mixed the chalk powder in 100 ml water. The water appeared white and cloudy. After some time the particles settled at the bottom of the container. She claims that the mixture is a suspension. What justifies her claim? (a)The particles mix completely with water. (b)The particles of chalk form a separate layer. (c) The particles of chalk are visible through the naked eye. (d) The particles of chalk are uniformly distributed in water. (ii)Garima listed some mixtures and classified them into various types.	4

Mixture	Components	Type of Mixture
W	Food colour + water	Homogenous mixture
X	Sand + water	Colloidal solution
Y	Rice + Flour	Heterogeneous mixture
Z	Oil and water	Homogenous mixture

Which mixtures are classified correctly?

(a)W and Y (b)X and Y (c)Y and Z (d)W and Y

	(iii)Reenafilled two glasses with 100 ml water in each. To glass 1, she added 5 mL orange food colour, and to glass 2 she added 10 mL orange food colour. Which water would appear darker of the two? (a)Glass 1 because it has less solute. (b)Glass 2 because it has more solute. (c)Glass 1 because it has more solvent. (d)Glass 2 because it has more solvent. (iv)Give two examples of a compound?	
	SECTION C	
29	The numerical ratio of displacement to distance for a moving object is (a) always less than 1 (b) always equal to 1 (c) always more than 1 (d) equal or less than 1	1
30	In the curve given below ,half the wavelength is  (a) A B (b) B D (c) D E (d) A E	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, 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):It is difficult to push or pull a heavy box over the ground. Reason(R): Heavy objects have more inertia.	1
32	Avinash can run with a speed of 8 m s–1 against the frictional force of 10 N, and Kapil can move with a speed of 3 m s–1 against the frictional force of 25 N. Who is more powerful and why?	2
33	A ball is dropped from a height of 10 m. If the energy of the ball reduces by 40% after striking the ground, how much high can the ball bounce back? (g = 10 m s–2). OR A rocket is moving up with a velocity v. If the velocity of this rocket is suddenly tripled, what will be the ratio of two kinetic energies?	2
34	Two friends on roller-skates are standing 5 m apart facing each other. One of them throws a ball of 2 kg towards the other, who catches it, How will this activity affect the position of the two? Explain your answer	2
35	Using following data, draw time - displacement graph for a moving object: **Time(s)** 0 2 4 6 8 10 12 14 16 **Displacement(m)** 0 2 4 4 4 6 4 2 0 Use this graph to find average velocity for first 4 s, for next 4 s and for last 6 s.	3

36	A girl is sitting in the middle of a park of dimension 12 m × 12 m. On the left side of it there is a building adjoining the park and on right side of the park, there is a road adjoining the park. A sound is produced on the road by a cracker. Is it possible for the girl to hear the echo of this sound? Explain your answer.	3
37	Two objects of masses m1 and m2 having the same size are dropped simultaneously from heights h1 and h2 respectively. Find out the ratio of time they would take in reaching the ground. Will this ratio remain the same if (i) one of the objects is hollow and the other one is solid (ii) both of them are hollow, size remaining the same in each case. Give reason.	3
38	(a) A cube of side 5 cm 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 4 cm 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. Give reason for each case. (b) A ball weighing 4 kg of density 4000 kg m–3 is completely immersed in water of density 103 kg m–3 Find the force of buoyancy on it. (Given g = 10 m s–2.)	5
39	When catching a fast-moving cricket ball, a fielder moves their hands backward with the ball. This action increases the time it takes for the ball's high velocity to drop to zero, which reduces the ball's acceleration and the impact force of the catch. Stopping the ball abruptly would decrease its velocity to zero rapidly, resulting in a large rate of change of momentum and a significant force that could injure the fielder's hand. (i) Which law of motion is primarily demonstrated by the fielder pulling his hands back? (ii)What is the main reason a fielder pulls his hands backward while catching? (iii)If the mass of the ball is 0.15 kgand it is moving at 20 m/s, its momentum is _____. (iv)A 1000 kg car moving at 30 m/s comes to a stop in 5 seconds. What is the amount of force required to stop it?	4

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