

केन्द्रीय विद्यालय संगठन, बेंगलुरु संभाग
KENDRIYA VIDYALAYA SANGATHAN, BENGALURU REGION

प्रथम प्री बोर्ड परीक्षा-2025-26
FIRST PRE BOARD EXAMINATION- 2025-26

CLASS – X

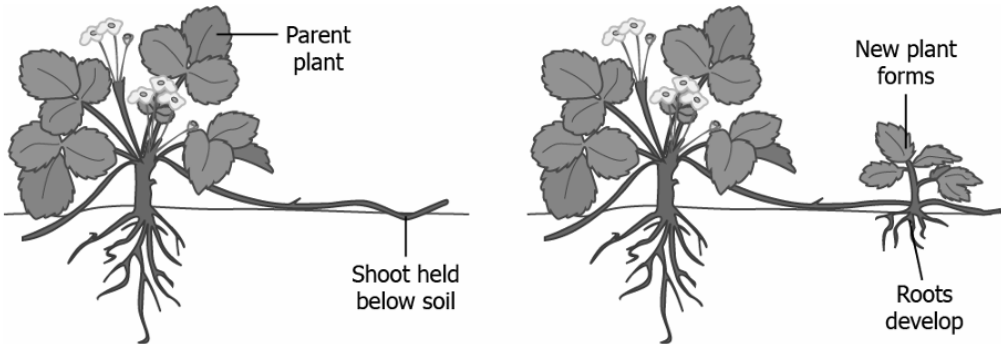
MAXIMUM MARKS: 80

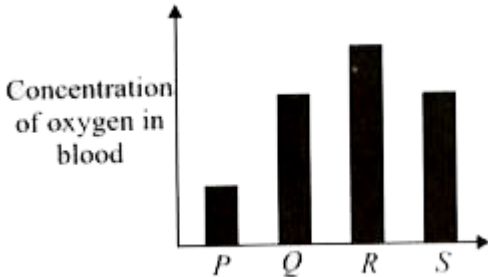
SUBJECT: SCIENCE (086)

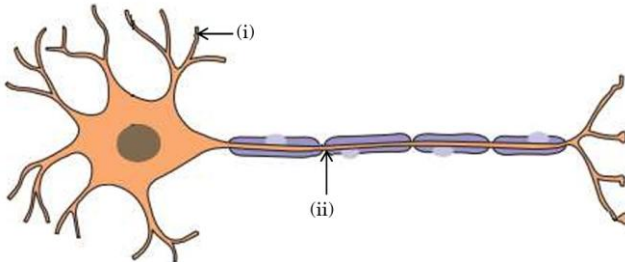
TIME: 3 hrs.

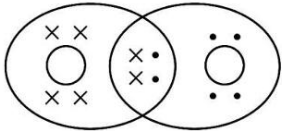
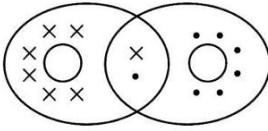
General Instructions:

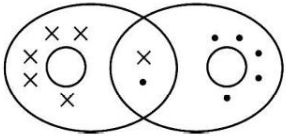
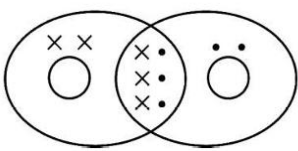
- (i) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics.
- (ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

	Section – A	Marks
1.	The action of which among the following is crucial to the formation of ozone. A. humans B. sunlight C. carbon dioxide D. chlorofluorocarbons	1
2.	The image shows the process of vegetative propagation in a plant.  The shoot of the parent plant is pushed below the soil that results in growth of a new plant. What is the advantage of this process? A. This results in plants of different flowers. B. This helps grow plants without adding extra manure. C. This eliminates the need of producing plants using seeds. D. This allows growth of plants with new genetic composition.	1
3.	When a pure-tall pea plant is crossed with a pure-dwarf pea plant, the percentage of tall pea plants in F1 and F2 generation pea plants will be respectively. A. 100%; 25% B. 100%; 50% C. 100%; 100% D. 100%; 75%	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.	

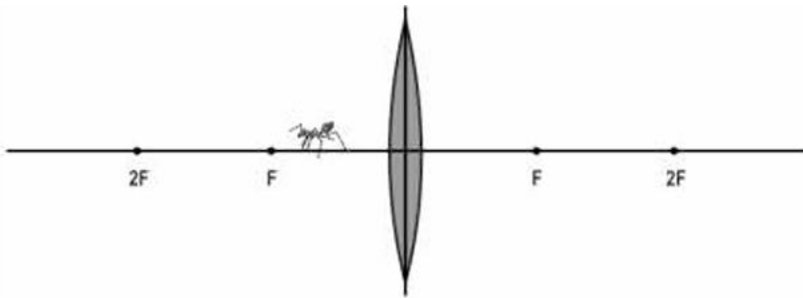
	B. Both A and R are true, and R is not the correct explanation of A. C. A is true, but R is false. D. A is false, but R is true.	
4.	Assertion (A): Human cannot digest cellulose. Reason (R): Specific enzymes are needed for the digestion of cellulose which is not present in human.	1
5.	Assertion (A): Offsprings produced by sexual reproduction show variation. Reason (R): Each offspring produced by sexual reproduction inherits all the genes from each parent.	1
6.	The given bar chart shows the concentration of oxygen in blood samples from four places in the circulatory system of a human. Which sample was taken from the pulmonary artery? A. P B. Q C. R D. S 	1
7.	In an ecosystem, the amount of energy of sunlight captured by green plants to convert it into food energy is: A. 90% B. 99% C. 1% D. 10%	1
8.	Examples of responses to hormones are listed. 1. growth of facial hair 2. increased blood pressure and pulse rate 3. widened pupils Which responses are caused by the hormone adrenaline? A. 1 and 2 only B. 1 and 3 only C. 2 and 3 only D. 1, 2 and 3	1
9.	When we touch the leaves of the 'touch-me-not' plant, they begin to fold up and droop. How does the plant communicate the information of touch? A. The plant uses electrical signals to transfer information from the external environment to its cells. B. The plant uses electrochemical signals to transfer information from one cell to another. C. The plant uses electrochemical signals to transfer information from tissues to specialized cells.	1

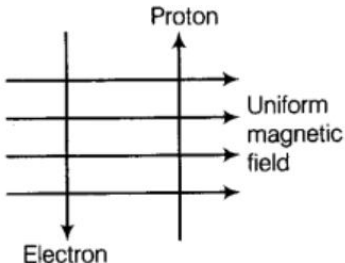
	D. The plant uses electrical signals to transfer information from cells to specialized tissues	
10.	Draw a diagram showing spore formation in Rhizopus and label the (a) reproductive and (b) non-reproductive parts.	2
11.	The digested food reaches to each cell of the body and it is utilised within the cell. Explain the processes involved.	2
12.	<u>Attempt either option A or B.</u> A. Write the name and function of parts (i) and (ii) in the diagram of a neuron given below.  OR B. - Name the disorder which a person is likely to suffer from over-secretion of growth hormone - How are the timing and the amount of release of insulin in the blood regulated?	2
13.	- Why has the Government of India prohibited prenatal sex determination by law? State its benefits in the long run. - Unsafe sexual acts can lead to various infections. Name two bacterial infections caused due to unsafe sex.	3
14.	- Longer food chains are not energy efficient. Justify the statement. - What is the difference between a zoo and national park. In terms of functional ecosystem?	3
15.	Not all plants carry out photosynthesis by the same mechanism. In most plants, photosynthesis depends directly on the gaseous carbon dioxide that diffuses into the leaf through the stomata. However, some plants - such as pineapple - has the ability to store carbon dioxide in the vacuoles of the leaf cells as part of a complex carbon compound. This complex compound is transported to the chloroplasts and releases carbon dioxide when required, for photosynthesis to occur. This special photosynthesis mechanism is believed to have evolved as an adaptation to conserve water for survival in dry conditions. A. Which process in the plants minimises, to help the plant survive in dry conditions? B. When are such plants likely to take in carbon dioxide from the environment? <u>Attempt either subpart C or D</u> C. How is the ability to store carbon dioxide as a complex compound likely to help minimise the process referred to in (A)? OR How do the processes of photosynthesis and respiration help sustain life on Earth?	4
16.	<u>Attempt either option A or B.</u> A.	5

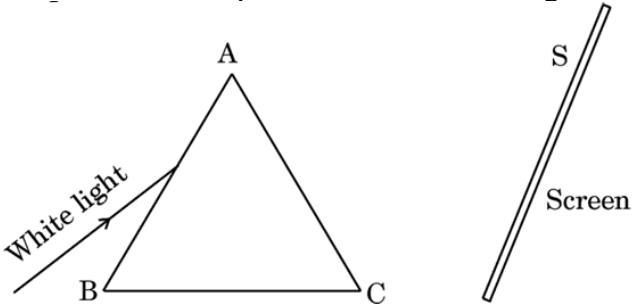
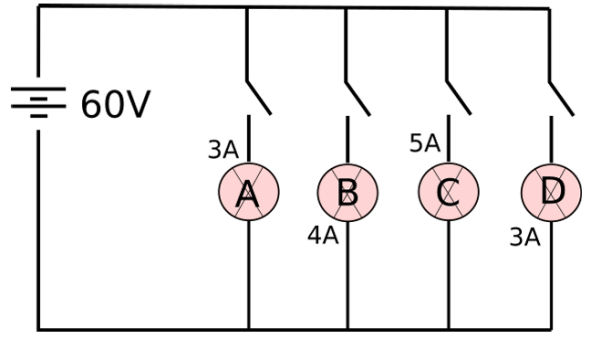
	i. When Mendel crossed pea plants with pure tall and pure short characteristics to produce F1 progeny, State observations made by him in F1 plants? ii. Write one difference between dominant and recessive trait. iii. In a cross with two pairs of contrasting characters $\begin{array}{ccc} \text{RRYY} & \times & \text{rryy} \\ \text{(Round Yellow)} & & \text{(Wrinkled Green)} \end{array}$ Mendel observed 4 types of combinations in F2 generation. By which method did he obtain F2 generation? Write the ratio of the parental combinations obtained and what conclusions were drawn from this experiment. iv. Nivedita has dark brown eyes, like her mother. But she has the same shaped nose as her father. Explain why Nivedita has features from both of her parents. OR B. Two human beings who can both roll their tongues produced 11 children. 3 of these children could not roll their tongues and 8 children could roll their tongues. i. Which trait (rolling or not rolling) is controlled by the recessive allele? State all possible genotypes of the F1 generation of the cross. ii. Show the inheritance of the tongue rolling in humans in the given example using a suitable cross. What percentage of offspring will show the same genotype as the parents? iii. If one of the parents could not roll their tongue, with the help of a cross, calculate the ratio of tongue-rollers to non-tongue-rollers in the off springs.	
	Section – B	
17.	A visually challenged student has to perform a lab test to detect the presence of acid in a given solution. The acid-base indicator preferred by him will be: A. Blue litmus B. Red cabbage extract C. Clove oil D. Hibiscus extract	1
18.	A metal ribbon 'X' burns in oxygen with a dazzling white flame forming a white ash 'Y'. The correct description of X, Y and the type of reaction is: A. X = Ca; Y = CaO; Type of reaction = Decomposition B. X = Mg; Y = MgO; Type of reaction = Combination C. X = Al; Y = Al₂O₃; Type of reaction = Thermal decomposition D. X = Zn; Y = ZnO; Type of reaction = Endothermic	1
19.	The correct representation of covalent bonding in an oxygen molecule is  A.  B.	1

	 C.  D.	
	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.	
20.	Assertion (A): Following are the structural isomers of butane. $\begin{array}{cccc} & \text{H} & \text{H} & \text{H} & \text{H} \\ & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} \end{array}$ $\begin{array}{ccccc} & \text{H} & & \text{H} & & \text{H} \\ & & & & & \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} - \text{H} \\ & & & & & \\ & \text{H} & & & & \text{H} \\ & & & & & \\ & & & \text{H} - \text{C} - \text{H} \\ & & & \\ & & & \text{H} \end{array}$ Reason (R): Structural isomers have the same molecular formula, but they differ in their structures.	1
21.	Trupti has given the following reasons for Gold being the most abundantly used metal for jewellery: (i) It has high ductility. (ii) It has high malleability. (iii) It shines more than other metals. (iv) It reacts quickly with oxygen to form a protective layer of oxide. (v) It does not react with water & oxygen even at high temperatures. Which of the reasons given is/are INCORRECT? A. only (iii) B. only (iv) C. only (v) D. only (i), (ii) & (iii)	1
22.	During electrolysis of water, if the volumes(V) of oxygen and hydrogen evolved at the electrodes are VO and VH respectively, then VO/VH is A. 4 B. 2 C. $\frac{1}{2}$ D. $\frac{1}{4}$	1
23.	Which of the following statements is correct about an aqueous solution of an acid and of a base? i. Higher the pH, stronger the acid ii. Higher the pH, weaker the acid iii. Lower the pH, stronger the base iv. Lower the pH, weaker the base A. (i) and (iii)	1

	B. (ii) and (iii) C. (i) and (iv) D. (ii) and (iv)									
24.	A metal X is used in the thermit process. When X is burnt in air it gives an amphoteric oxide Y. Identify X and Y Respectively. A. Fe and Fe ₂ O ₃ B. Al and Al ₂ O ₃ C. Fe and Fe ₂ O ₃ D. Al and Al ₂ O ₄	1								
25.	The given reaction shows one of the processes to extract the metals like Iron and Manganese. $\text{MnO}_2(\text{s}) + \text{Al}(\text{s}) \longrightarrow \text{Mn}(\text{l}) + \text{Al}_2\text{O}_3(\text{s}) + \text{Heat}$ i. Give reason why the above reaction is known as a thermite reaction. ii. Give a reason why Aluminium is preferably used in thermite reactions.	2								
26.	<u>Attempt either option A or B.</u> A. A reddish-brown metal 'X', when heated in air, gives a black compound 'Y', which when heated in presence of H ₂ gas gives 'X' back. 'X' is refined by the process of electrolysis. This refined form of 'X' is used in electrical wiring. Identify 'X' and 'Y'. Draw a well-labelled diagram to represent the process of refining 'X'. OR B. Metal X is found in nature as its sulphide XS. It is used in the galvanisation of iron articles. Identify the metal X. How will you convert this sulphide ore into the metal?	3								
27.	The formulae of four organic compounds are given below: <table style="width: 100%; border: none;"><tr><td style="text-align: center;">A</td><td style="text-align: center;">B</td><td style="text-align: center;">C</td><td style="text-align: center;">D</td></tr><tr><td style="text-align: center;">C₂H₄</td><td style="text-align: center;">CH₃COOH</td><td style="text-align: center;">C₂H₅OH</td><td style="text-align: center;">C₂H₆</td></tr></table> (i) Which one of these compounds A, B, C or D is an unsaturated hydrocarbon? (ii) Identify the organic acid (iii) Which of the above compounds when heated at 443K in the presence of concentrated H ₂ SO ₄ forms ethene as the major product? What is the role played by concentrated H ₂ SO ₄ in this reaction? Also write the chemical equation involved.	A	B	C	D	C ₂ H ₄	CH ₃ COOH	C ₂ H ₅ OH	C ₂ H ₆	3
A	B	C	D							
C ₂ H ₄	CH ₃ COOH	C ₂ H ₅ OH	C ₂ H ₆							
28.	While helping at home, Rauf observes that his mother uses baking soda instead of baking powder while making a cake. A. How will this substitution affect the taste of the cake, and why? B. What additional ingredient is needed to convert baking soda into baking powder? What is the role of this ingredient in ensuring the cake turns out soft and tasty? <u>Attempt either subpart C or D</u> C. Rauf observes that the doctor uses a white powder mixed with water to plaster his fractured hand. After a short time, the mixture hardens and forms a solid cast. Identify the compound and write the chemical reaction involved. OR	4								

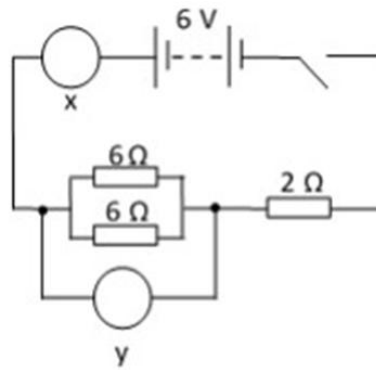
	D. During electrolysis of brine, a gas G is liberated at anode. When this gas is passed through slaked lime, a compound C is formed which is used for disinfecting drinking water. Write formulas of 'G and C'. State the chemical equation involved	
29.	<u>Attempt either option A or B.</u> A. - Identify the reducing agent in the following reactions: $2H_2 + O_2 \rightarrow 2H_2O$ - Write down the balanced chemical equations for the following reaction and identify the type of reaction. Lead nitrate is heated strongly to form lead monoxide, nitrogen dioxide and oxygen. - Write the chemical equation when aqueous solutions of potassium iodide and lead nitrate are mixed together? Name the type of reaction. OR B. - Dil. HCl is added to Zn granules.” How will you prove that chemical change has taken place here? State two points to justify your answer. - List any two observations when 2 g of ferrous sulphate crystals are heated in a dry boiling tube. - Why do we store silver chloride in dark coloured bottles? - Why do chips manufacture flush bags of chips with Nitrogen gas?	5
	<u>Section – C</u>	
30.	An ant was in front of a convex lens as shown below.  Which of the following shows the image of the ant observed through the convex lens?  A.  C.  B.  D.	1
31.	A uniform magnetic field exists in the plane of paper pointing from left to right as shown in Figure. In the field an electron and a proton move as shown. The electron and the proton experience	1

	 A. forces both pointing into the plane of paper B. forces both pointing out of the plane of paper C. forces pointing into the plane of paper and out of the plane of paper, respectively D. force pointing opposite and along the direction of the uniform magnetic field respectively	
	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.	
32.	Assertion (A): The pattern of the magnetic field of a solenoid carrying a current is similar to that of a bar magnet. Reason (R): The pattern of the magnetic field around a current carrying conductor is independent of the shape of the conductor.	1
33.	An object is placed perpendicular to the principal axis of a convex mirror of focal length 10 cm. The distance of the object from the pole of the mirror is 10 cm. Find the position of the image formed.	2
34.	<u>Attempt either A or B.</u> A. Name the principle on which an electric fuse works. Explain how a fuse wire is capable of saving electrical appliances from getting damaged due to accidentally produced high currents. OR B. State the law that relates current through a conductor and the potential difference between its ends. Represent the law mathematically.	2
35.	Rishi went to a palmist to show his palm. The palmist used a special lens for this purpose. - State the nature of the lens and reason for its use. - If the focal length of this lens is 10 cm and the lens is held at a distance of 5 cm from the palm, use lens formula to find the position and size of the image.	3
36.	- How is the type of current used in household supply different from the current given by a battery of dry cells? - Why is the earth wire considered important in an electric circuit? - How is a uniform magnetic field in a given region represented? Draw a diagram in support of your answer.	3

37.	A child, while playing with his father's spectacles, made the paper burn by focusing the sun's rays on it. - What defect of vision his father is suffering from? - State the part of the eye responsible for this condition. - State the role of the corrective lens in this case. - Draw the figure of its correction.	3
38.	A person allowed a narrow beam of white light from the sun to enter a dark room through a small aperture and placed a glass prism in its path in such a manner that the beam falls on the face AB of the prism as shown in the figure.  A screen S is placed on the other side of the prism, facing AC. On turning the prism slowly, a beautiful band of colours is obtained on the screen. It is the spectrum of sunlight. - Name the phenomenon due to which a prism splits the incident white light into a band of colours. - State the reason of getting a band of seven colours in the above case. <u>Attempt either subpart C or D.</u> - Explain with the help of a labelled ray diagram, an experimental arrangement to show the recombination of the spectrum of white light. OR - Draw a labelled ray diagram to show the formation of a rainbow	4
39.	<u>Attempt either option A or B.</u> A. In the given circuit, A, B, C and D are four lamps connected with a battery of 60V.  Analyse the circuit to answer the following questions. - What kind of combination are the lamps arranged in (series or parallel)? - Explain with reference to your above answer, what are the advantages (any two) of this combination of lamps? - Explain with proper calculations which of the above lamps glows the brightest? - Find out the total resistance of the circuit.	5

OR

B. The circuit in below Figure has resistors in series and parallel.



- (i) State two factors that affect the resistance of a resistor.
- (ii) X and Y are meters. identify X and Y and the electrical property that each meter measures.
- (iii) Calculate the equivalent resistance in the circuit
- (iv) Using your answer to (iii), calculate the current in the circuit. State the unit
