

COIMBATORE SAHODAYA SCHOOLS COMPLEX

CBESSC Pre Board Examination 2024-2025

SCIENCE (086)

SET B

Class: X

Time: 3 Hrs

Name: _____

Max. Marks: 100

General Instructions:

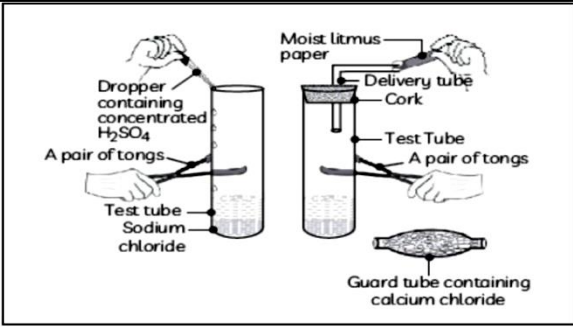
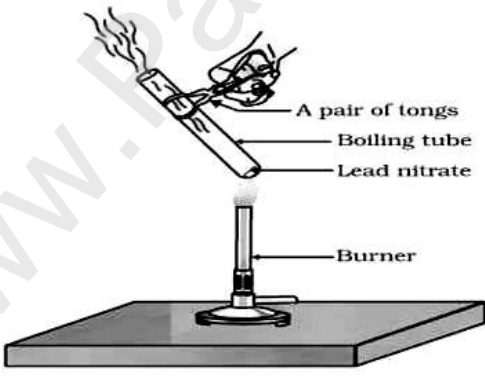
Read the following instructions carefully and strictly follow them:

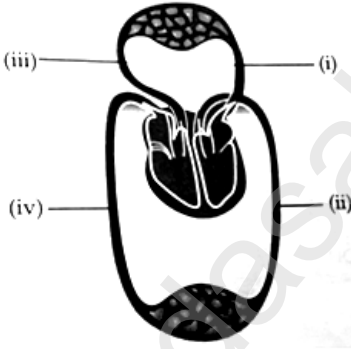
- This question paper consists of 39 questions. All questions are compulsory.
- Question paper is divided into FIVE sections viz. Section A, B, C, D and E.
- In Section A question number 1 to 20 are Multiple Choice Questions (MCQs) carrying 1 mark each.
- In Section B question number 21 to 26 are Very Short Answer (VSA) type questions carrying 2 marks each. Answer to these questions should be in the range of 30 to 50 words.
- In Section C question number 27 to 33 are Short Answer (SA) type questions carrying 3 marks each. Answer to these questions should be in the range of 50 to 80 words.
- In Section D question number 34 to 36 are Long Answer (LA) type - questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
- In Section E question number 37 to 39 are of 3 source-based/case-based units of assessment carrying 4 marks each with sub-parts.
- There is no overall choice. However, an internal choice has been provided in some Sections

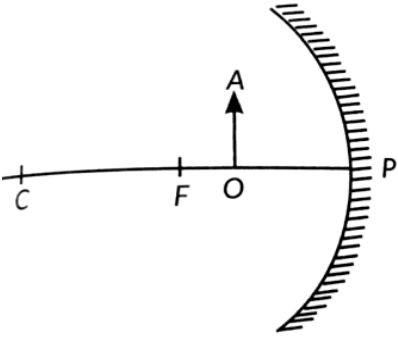
Section – A

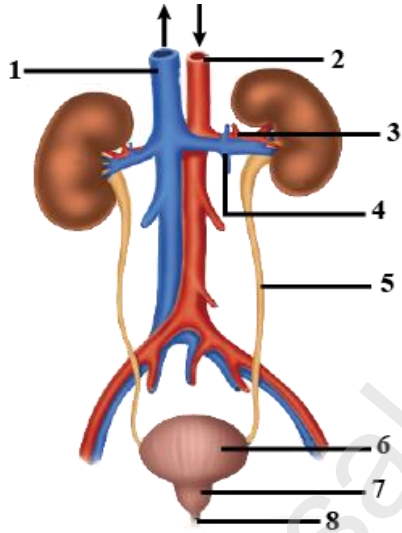
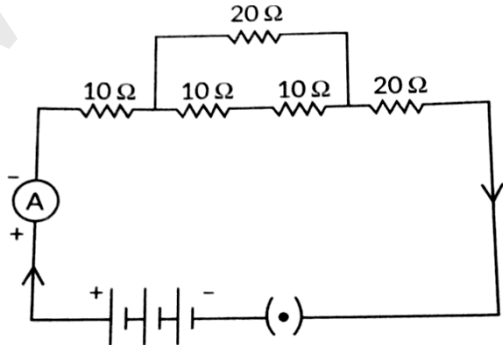
Select and write the most appropriate option out of the four options given for each of the questions 1 – 20. There is no negative mark for incorrect response.


Q.NO		MARKS
1.	Which of the statements about the reaction below are incorrect? $2\text{PbO} + \text{C} \rightarrow 2\text{Pb} + \text{CO}_2$ (i) Lead is getting reduced. (ii) Carbon dioxide is getting oxidised. (iii) Carbon is getting oxidised. (iv) Lead oxide is getting reduced. (A) (i) and (ii) (B) (i) and (iii) (C) (i), (ii) and (iii) (D) all	1
2.	Which of the following methods is suitable for preventing an iron frying pan from rusting? (A) Applying grease (B) Applying paint (C) Applying coating of zinc (D) All of the above	1
3.	The change in colour of the moist litmus paper in the given set up is due to	1

	 <p>i. presence of acid ii. presence of base iii. presence of H^+ (aq) in the solution iv. presence of Litmus which acts as an indicator (A) i and ii (B) Only ii (C) Only iii (D) Only iv</p>	
4.	<p>Which of the following statements is correct about an aqueous solution of an acid and of a base?</p> <p>(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) (B) (ii) and (iii) (C) (i) and (iv) (D) (ii) and (iv)</p>	1
5.	<p>The emission of brown fumes in the given experimental set-up is due to</p> <p>1</p>  <p>(A) thermal decomposition of lead nitrate which produces brown fumes of nitrogen dioxide. (B) thermal decomposition of lead nitrate which produces brown fumes of lead oxide. (C) oxidation of lead nitrate forming lead oxide and nitrogen dioxide. (D) oxidation of lead nitrate forming lead oxide and oxygen.</p>	1
6.	<p>An element 'M' has 50% of the electrons filled in the 3rd shell as in the 2nd shell. The atomic number of 'M' is:</p> <p>(A) 10 (B) 12 (C) 14</p>	1

	(D) 18	
7.	The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is (A) Blue (B) Colourless (C) Dirty green (D) Reddish Brown	1
8.	Which is the correct sequence of air passage during inhalation? (A) Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli (B) Nostrils → larynx → pharynx → trachea → bronchi → bronchioles → alveoli (C) Nostrils → pharynx → trachea → larynx → bronchi → bronchioles → alveoli (D) Nostrils → pharynx → larynx → trachea → bronchioles → bronchi → alveoli	1
9.	The figure given below shows the schematic plan of blood circulation in human with labels (i) to (iv). Identify the correct label with its function.  (A) pulmonary vein – takes impure blood from body parts. (B) pulmonary artery – take blood from lungs to heart. (C) aorta– takes deoxygenated blood from heart to body parts. (D) vena cava- takes deoxygenated blood from body parts to right auricle.	1
10.	From the given statement which is not the function of hydrochloric acid : (A) kills the bacteria. (B) converts inactive pepsinogen into active pepsin. (C) creates an acidic medium and helps in the digestion of protein. (D) activates the enzyme trypsin.	1
11.	An athlete met with an accident and a part of his brain was injured. He was finding difficult to balance and walk. Which part of his brain was injured? (A) Cerebrum (B) Medulla (C) Occipital lobe (D) Cerebellum	1
12.	A pregnant woman has an equal chance of her baby being blood group A or blood group AB. Which one of the following shows the possible genotypes of the women and the father of her child? (A) $I^A I^A$ and $I^B I^O$ (B) $I^A I^B$ and $I^B I^O$ (C) $I^A I^O$ and $I^B I^O$ (D) $I^O I^B$ and $I^A I^O$	1

13.	 <p>For the diagram shown, according to the new Cartesian sign convention the magnification of the image formed will have the following specifications:</p> <p>(A) Sign - Positive, Value - Less than 1 (B) Sign - Positive, Value - More than 1 (C) Sign - Negative, Value - Less than 1 (D) Sign - Negative, Value - More than 1</p>	1
14.	<p>Consider the following statements:</p> <p>I. Very fine particles scatter mainly blue light. II. Advance sunrise and delayed sunset are due to atmospheric refraction. III. Violet light bends the least while red light bends the most when a beam of white light passes through a glass prism.</p> <p>The correct statement (s) is /are :</p> <p>(A) I only (B) III only (C) I and II (D) II and III</p>	1
15.	<p>The percentage of solar radiation absorbed by all green plants for photosynthesis is about__.</p> <p>(A) 10 % (B) 1% (C) 2% (D) 100%</p>	1
16.	<p>The excessive exposure of humans to UV rays results in_____.</p> <p>(A) cerebral dysfunction (B) peptic ulcers (C) skin cancer (D) arthritis</p>	1
<p>Question No. 17 to 20 consist of two statements - Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:</p> <p>(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.</p>		
17.	<p>Assertion (A): Metals in the middle of activity series are found in nature as sulphides or carbonates. Reason (R): The sulphide ores are calcinated whereas carbonate ores are roasted to extract metals from them.</p>	1
18.	<p>Assertion (A): Amoeba reproduces through binary fission. Reason (R): Amoeba is an unicellular organisms.</p>	1
19.	<p>Assertion (A): The SI unit of power is dioptre</p>	1

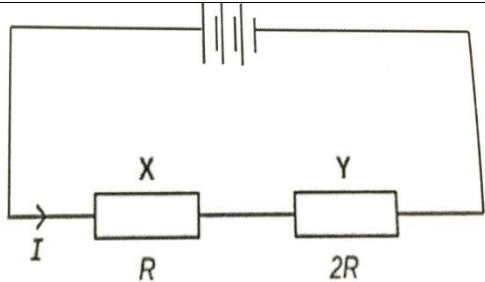
	Reason (R): The power of a concave lens is positive and that of a convex lens is negative	
20.	Assertion (A): Removing producers from the food chain will endanger the survival of organisms in the next trophic level. Reason (R): Producers are the main source of energy for all living organisms.	1
	Section – B Question No. 21 to 26 are very short answer questions.	
21.	What is observed when aqueous solutions of potassium iodide and lead nitrate are mixed together? Name the type of reaction and write the chemical equation for the reaction that occurs.	2
22.	Look at the given picture and answer the following questions:  (a) Name the parts labeled as 5 and 6. (b) Write one specific function of renal artery and urethra.	2
23.	'Stomata remain closed in desert plants during daytime'. How do they synthesize their food by the process of photosynthesis? OR State the role of the liver in the process of digestion.	2
24.	The absolute refractive indices of water and glass are $\frac{4}{3}$ and $\frac{3}{2}$ respectively. If the speed of light in glass is 2×10^8 m/s, calculate the speed of light in (i) Vacuum (ii) Water.	2
25.	Calculate the equivalent resistance of the following electric circuit:  OR (a) List three factors on which the resistance of a conductor depends. (b) Write SI unit of resistivity.	2

26.	<p>Observe the given image and write any two ways in which non-biodegradable substances would affect the environment.</p> 	2
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Section – C

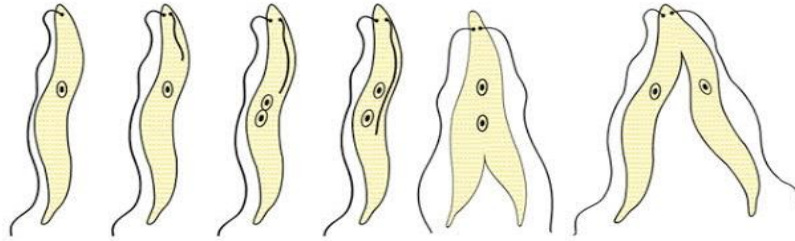
Question No. 27 to 33 are short answer questions.

27.	<p>(i) By the transfer of electrons, illustrate the formation of a bond in magnesium chloride and identify the ions present in this compound.</p> <p>(ii) Ionic compounds are solids. Give reasons.</p>	3																
28.	<p>(a) Salt A commonly used in bakery products on heating gets converted into another salt B which itself is used for removal of hardness of water and a gas C is evolved.</p> <p>The gas C when passed through lime water, turns it milky.</p> <p>(i) Identify A, B and C.</p> <p>(ii) Write the equation for the action of heat on salt A.</p> <p>(iii) Which is the raw material for the preparation of salt A.</p> <p style="text-align: center;">OR</p> <p>(b) Explain the action of dilute hydrochloric acid on the following with chemical equations.</p> <p>(i) Magnesium ribbon</p> <p>(ii) Sodium hydroxide</p> <p>(iii) Crushed egg shells</p>	3																
29.	<p>Compare and contrast arteries and veins based on the following.</p> <table border="1" data-bbox="244 1805 1174 2051"> <thead> <tr> <th>S.No.</th> <th>Feature</th> <th>Arteries</th> <th>Veins</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Structure - Walls and valves</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Function</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Blood flow direction</td> <td></td> <td></td> </tr> </tbody> </table>	S.No.	Feature	Arteries	Veins	1	Structure - Walls and valves			2	Function			3	Blood flow direction			3
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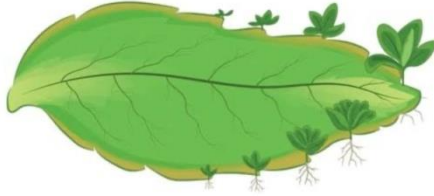
30.	(i) What is F2 generation? (ii) Why traits such as intelligence and knowledge cannot be passed on to the next generation? (iii) "The sex of the children is determined by what they inherit from their father and not their mother". Justify.	3
31.	A person is suffering from both myopia and hypermetropia. (a) What is this condition called? (b) When does this happen? (c) Name the type of lens often required by the person suffering from this defect. Draw labelled diagram of such lenses.	3
32.	 <p>The above figure shows two resistors X and Y connected in series to a battery. The power dissipated for this combination is P_1. When these resistors are connected in parallel to the same battery then the power dissipated is given by P_2. Find out the ratio P_1 / P_2.</p>	3
33.	Draw the pattern of the magnetic field produced around a vertical current carrying straight conductor passing through a horizontal cardboard. Mark the direction of current and the magnetic field lines. Name and state the rule which is used to determine the direction of magnetic field associated with a straight current carrying conductor.	3
Section – D		
Question No. 34 to 36 are long answer questions.		
34.	(a) An acid 'X' and an alcohol 'Y' react with each other in the presence of an acid catalyst to form a sweet smelling substance 'Z'. Identify 'X', 'Y' and 'Z'. Write the chemical equation for the reaction involved and name it. The substance 'Z' on treatment with sodium hydroxide produces back the alcohol 'Y' and sodium ethanoate. Write the chemical equation for the reaction involved and name it, giving justification for the name. OR (i) Name the simplest saturated hydrocarbon. Draw its electron dot structure. Which type of bonds exist in this compound? (ii) Name any two mixtures of the carbon compound used as a fuel in daily life, of which the above mentioned compound is an important component. (iii) In which homologous series of carbon compounds can this compound be placed? Write the general formula of the series. (iv) Which type of flame is produced on burning it?	5
35.	Attempt either option A or B. A. (i) Draw and label the female reproductive system. (ii) Name the four methods of contraception. OR	5

B. (i) Identify the organism and mode of reproduction from the given picture.

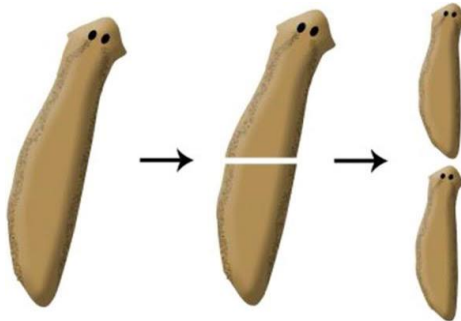
(a)



(b)



(c)

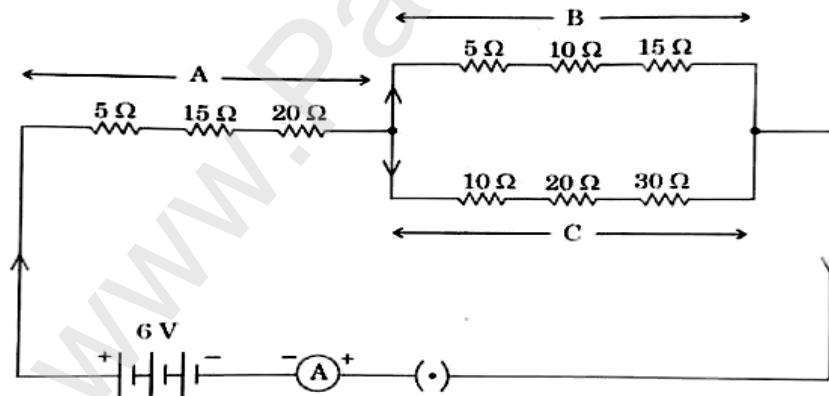


(ii) Differentiate between pollination and fertilisation.

36.

Study the following electric circuit in which the resistors are arranged in three arms A, B and C.

5



(a) Find the equivalent resistance of arm A.

(b) Calculate the equivalent resistance of the parallel combination of the arms B and C.

(c) Determine the current that flows through the ammeter.

(d) List two disadvantages of using a series circuit in homes.

OR

(a) With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances.

(b) In an electric circuit two resistors of $12\ \Omega$ each are joined in parallel to a 6V

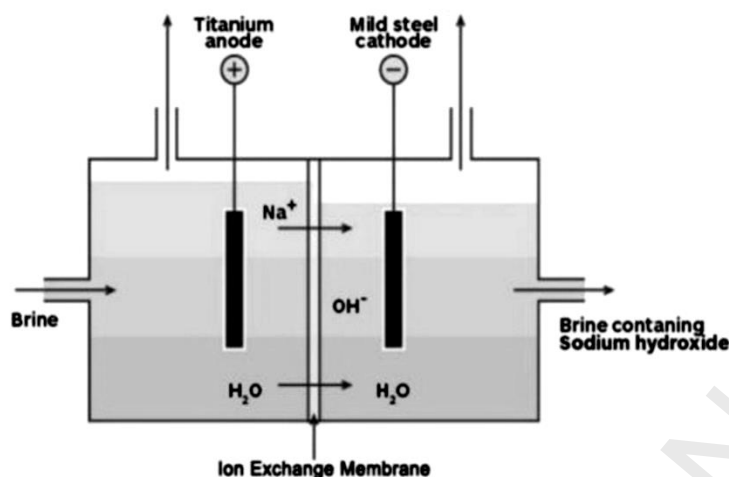
battery. Find the current drawn from the battery.

SECTION – E

Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37. Look at the picture and answer the questions that follow.

4



- (a) Identify the gases evolved at the anode and cathode in the above experimental set up.
 (b) Name the process that occurs. Why is it called so?
 (c) Explain the process with the help of a chemical equation.

OR

- (c) Write any two uses of gases evolved in the above reaction.

38. Plants do not move but they respond to their environment. It means the cells must be able to communicate with other cells. Hormones send messages between the cells. Plant hormones or phytohormones are also known as plant growth substances as they coordinate the activities of plants by controlling one or the other aspect of the growth of the plant.

4

- (a) Name the plant hormone responsible for rapid cell division.
 (b) Give an example for thigmonastic movements.
 (c) State any two functions of gibberellins.

OR

- (c) What is phototropism? Which hormone is responsible for phototropism in plants?

39. Slides are small transparencies mounted in sturdy frames of slide projectors ideally suited for magnification and projection, since they have a high image quality. There is a tray where the slides are to be put into a particular orientation so that the viewers can see the enlarged erect images of the transparent slides. This means that the slides have to be inserted upside down in the projector tray.

4

To show her the images of insects that she investigated in the lab, Mrs.Laya brought a slide projector. Her slide projector produced a 500 times enlarged and inverted image of a slide on a screen 10 m away.

- (a) Based on the text and data given in the above paragraph, what kind of lens must the slide projector have?

(b) If v is the symbol used for image distance and u for object distance then with one reason state what will be the sign for v/u in this case.

(c) A slide projector has a convex lens with a focal length of 20 cm. The slide is placed upside down 21 cm from the lens. How far should the screen be placed from the slide projector's lens so that slide is in focus?

OR

(c) Draw a ray diagram to show the image formed if the slide is kept beyond $2F_1$ of the slide projector's lens and write the characteristics of the image formed.

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