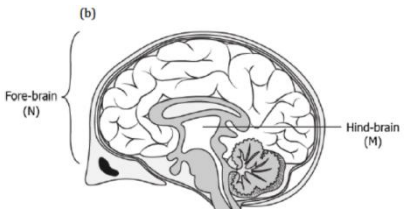
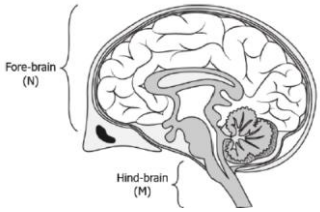
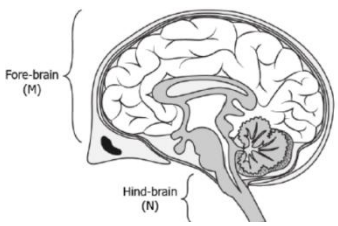
Pre-Board Examination (2025-26)
Class:10
Subject & Subject Code: Science Theory, (086)

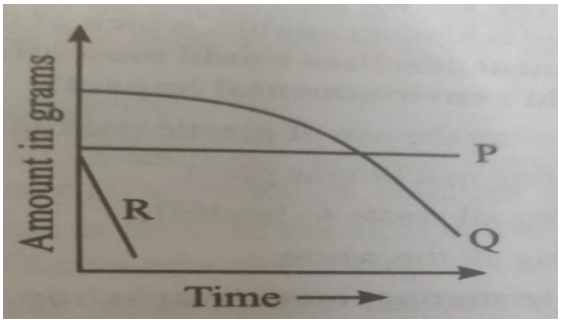
Time:3 hours **Max. Marks: 80**

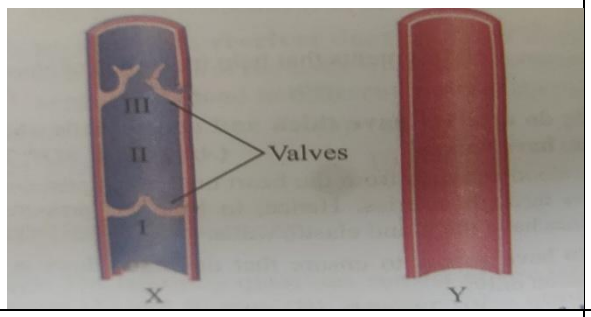
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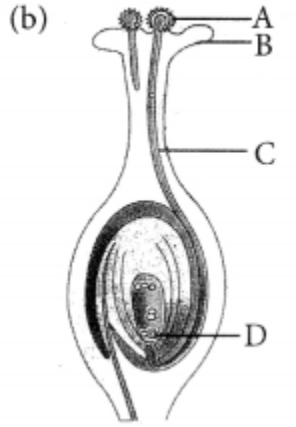
(i) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics.

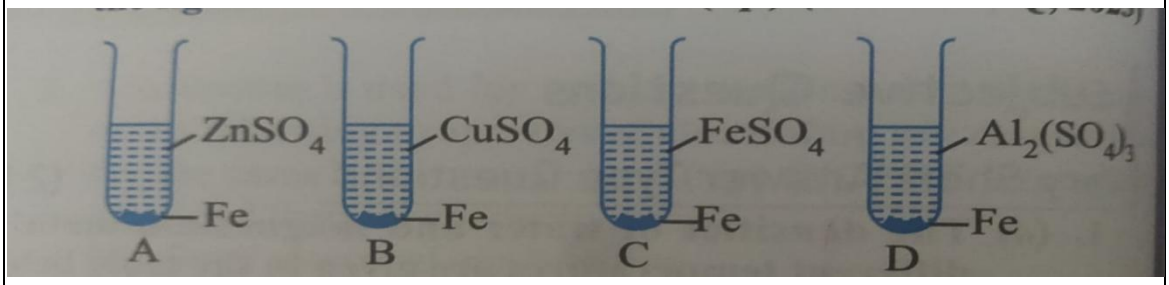
(ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

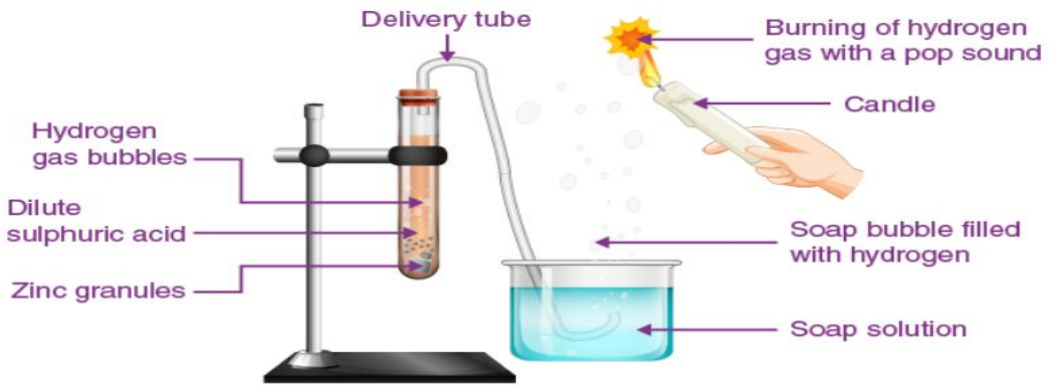
Q. No.	SECTION-A	Marks
1	Which of the following events in the mouth cavity will be affected if salivary amylase is lacking in the saliva? **A.** Starch breaking down into sugars. **B**. Proteins breaking down into amino acids. C. Absorption of vitamins. **D**. Fats breaking down into fatty acids and glycerol.	1
2	Height of a plant is regulated by: **A**. D.N.A which is directly influenced by growth hormone B. Genes which regulate the protein directly **C**. Growth hormones under the influence of the enzyme coded by a gene. **D**. Growth hormones directly under the influence of gene	1
3	The part where the exchange of gases occurs during respiration is: **A**. Lungs and larynx **B**. Alveoli and throat **C**. Throat and lungs **D**. Alveoli and capillaries	1
4	What is the ratio of average amount of energy absorbed by producers to the average amount of energy absorbed by the primary consumers? A. 1:2 B. 2:1 C. 1:10 D. 10:1	1
5	Which of the following option illustrates the location of the centre that controls the feelings associated with hunger (M) and the centre that allows a person to walk in a straight line (N)? **A.**  **B.**  **C.**  **D.** 	1

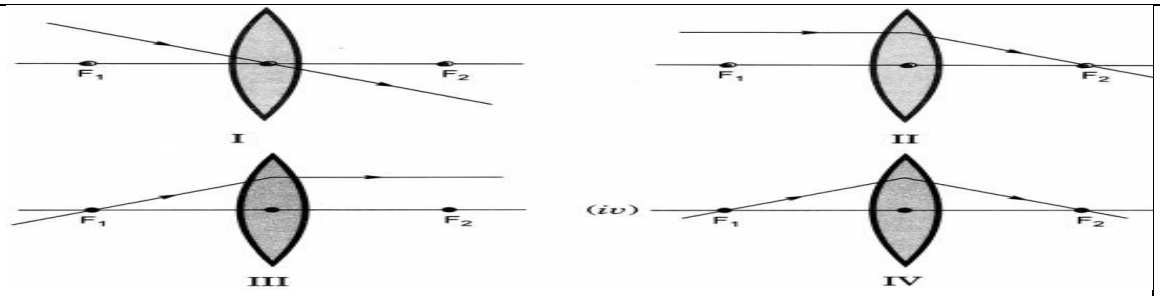
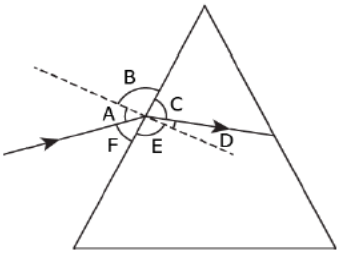
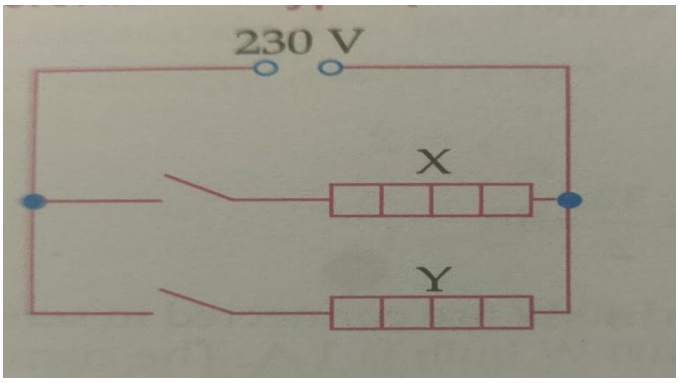
6	Samaira conducted an experiment where she buried three different types of solid wastes (**P, Q** and **R**) under the soil in a pot to study their decomposition rates. The graph below shows the decomposition rates of these wastes over time.  **Select the option that correctly identifies P, Q and R:** **Option** / **P** / **Q** / **R** **A** / Banana peel / Plastic bottle / Paper cup **B** / Polythene bag / Bone / Orange peel **C** / Apple core / Metal Can / Cardboard **D** / Rubber cover / Vegetable scrap / Wooden stick	1
7	A monohybrid cross was conducted between one variety of pea plants having pods that are full (FF) and another having pods that are constricted (ff). What is the percentage of heterozygous offsprings in F1 generation? A. 0% B. 25% C. 75% D.100%	1
	Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: **A.** Both 'A' and 'R' are true, and 'R' is correct explanation of the Assertion. **B.** Both 'A' and 'R' are true, but 'R' is not correct explanation of the Assertion. **C.** 'A' is true, but 'R' is false. **D.** 'A' is false, but 'R' is true.	
8	**Assertion (A):** The trophic level in a food chain should be limited. **Reason (R)**: There is a loss of energy as we go from one trophic level to the next, this limits the number of trophic levels in a food chain.	1
9	**Assertion(A):** The effect of auxin hormone on the growth of root is exactly opposite to that on a stem. **Reason (R):** Auxin hormone increases the rate of growth in root and decreases the rate of growth in stem.	1
10	All plants give out oxygen during the day and carbon dioxide during night. Do you agree with this statement? Give reason.	2
11	**<u>Students to attempt either option A or B.</u>** **A.** "The improvement in our lifestyle has led to the generation of large amount of waste material." List two reasons to justify this statement. **OR** **B.** If all the waste generated is biodegradable, will this have an impact on the environment? Justify you answer.	2

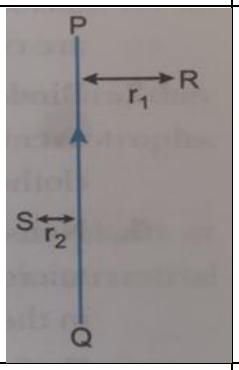
12	Given below are two different types of blood vessels X and Y. Based on your observation, answer the following questions: **(i)** Identify X and Y **(ii)** In which direction does blood flow in X? Do you think blood will flow from I to II? Give reason for your answer.  	2
13	A 10 year old child was observed to be significantly shorter than other children of the same age. After a medical examination it was found that the child had deficiency of a particular hormone. Considering this scenario: **(i)** Identify the hormone likely to be deficient and the gland responsible for its secretion. **(ii)** Name the disorder caused due to over and under secretion of this hormone.	3
14	A green stemmed rose plant denoted by GG and a brown stemmed rose plant denoted by gg are allowed to undergo a cross with each other. **A.** List your observation regarding: (i) Colour of stem in F1 progeny. (ii) Percentage of brown stemmed plants in F2 progeny if F1 plants are self-pollinated. (iii) Ratio of GG and Gg in F2 progeny. **B.** Based on the findings of this cross, what conclusion can be drawn?	3
15	The human digestive system is a tube running from mouth to anus. Its main function is to break-down complex molecules present in the food which cannot be absorbed as such into smaller molecules. These molecules are absorbed across the walls of the tube, and the absorbed food reaches each and every cell of the body where it is utilised for obtaining energy. Based on the understanding of the concept answer the following questions: **(i)**. Name the glands present in the buccal cavity and write the components of food on which the secretion of these glands act upon. (ii) Two organs have a sphincter muscle at their exit. Name them. **Attempt either option (iii) or (iv)** **(iii)** What will happen if: (a) mucus is not secreted by the gastric glands. (b) Villi are absent in the small intestine. **OR** **(iv)**. "Bile juice does not contain any enzyme, yet it has important roles in digestion." Justify the statement.	4

16	**Attempt either option A or B.** **A.** (a)List two reasons for the appearance of variations among the progeny formed by sexual reproduction. (b)  (i) Name the part marked A in the diagram. (ii) How does A reach part B? (iii) State the importance of the part C. (iv) What happens to the part marked D after fertilisation is over? **OR** **B**. (a)What are sexually transmitted diseases? (b) List one example of each of diseases caused due to: (i) bacterial infection and (ii) viral infection. (c)Which device or devices may be used to prevent the spread of such diseases? (d) How does the use of contraceptive methods have a direct effect on the health and prosperity of a family?	5
	SECTION-B	
17	Which among the following statement(s) is (are) true? Exposure of silver chloride to sunlight for a long duration turns grey due to - (i) the formation of silver by decomposition of silver chloride (ii) sublimation of silver chloride (iii) decomposition of chlorine gas from silver chloride (iv) oxidation of silver chloride **A**. (i) only **B.** (i) and (iii) **C**. (ii) and (iii) **D.** (iv) only	1
18	You are having five solutions X, Y, Z, A and B with pH values as follows X=1.8, Y=7, Z=8.5, A=8 and B=5 Which solution would be most likely to liberate hydrogen with magnesium powder? A. Solution X and Y B. Solution X C. Solution Z and B D. Solution A	1
19	Which of the following can undergo a chemical reaction? **A**. $MgSO_4 + Fe$ **B**. $ZnSO_4 + Fe$ **C**. $MgSO_4 + Pb$ **D**. $CuSO_4 + Fe$	1
20	The displacement reaction between iron (III) oxide and a metal X is used for welding the rail tracks. Here X is: **A**. Copper granules **B**. Magnesium ribbon **C**. Sodium pellets **D.** Aluminium dust	1
21	What happens when a solution of an acid is mixed with a solution of a base in a test tube? (i) Temperature of the solution decreases (ii) Temperature of the solution increases (iii) Temperature of the solution remains the same (iv) Salt formation takes place **A**. (i) and (iv) **B.** (i) and (iii) **C.** (ii) only **D.** (ii) and (iv)	1

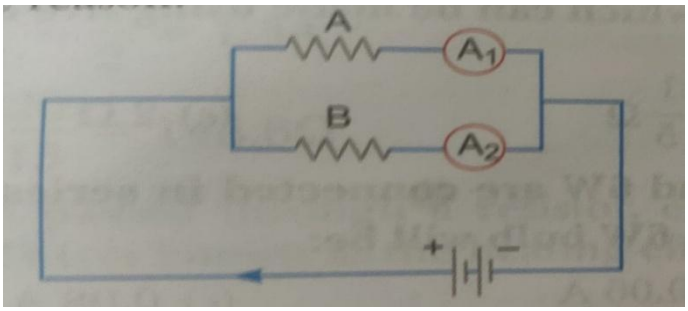
22	The electronic configuration of three elements X, Y and Z are as follows: X = 2, 4; Y = 2, 7; Z = 2,1 Which two elements will combine to form an ionic compound and choose the correct formula - **A**. X_2Y **B**. Z Y **C**. XZ **D.** Y_2Z	1
23	Which of the following statements is correct about an aqueous solution of an acid and of a base? (i) Higher the pH, stronger the acid (ii) Higher the pH, weaker the acid (in) 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)	1
	The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: A. Both 'A' and 'R' are true, and 'R' is the correct explanation of the Assertion. B. Both 'A' and 'R' are true, but 'R' is not the correct explanation of the Assertion. C. 'A' is true, but 'R' is false. D. 'A' is false, but 'R' is true.	
24	**Assertion (A):** Following are the members of a homologous series: CH_3OH, CH_3CH_2OH, $CH_3CH_2CH_2OH$ **Reason (R):** A series of compounds with same functional group but differing by - CH_2 unit is called a homologous series.	1
25	Sakshi was comparing the reactivity of different metals for her science project. She added iron filings in four test tubes A, B, C and D containing aqueous solution of $ZnSO_4$, $CuSO_4$, $FeSO_4$ and $Al_2(SO_4)_3$ respectively as shown in the figure:  **(i)** In which test tube will she observe the reaction to be most vigorous? Give reason for her observation. **(ii)** Write a balanced equation of the reaction.	2
26	**(i)** Oxide of an element X is used intensively in the cement industry. This element is present in bones also. On treatment with water, it forms a solution which turns red litmus blue. Identify X and write the chemical reactions involved. **(ii)** What happens when hydrogen gas is passed over the heated CuO? Mention the colour change and write chemical equation for the reaction.	3
27	**<u>Attempt either option A or B.</u>** **A.** Metal X is found in nature as its sulphide XS. It is used in the galvanisation of iron articles. (i) Identify the metal X. (ii) How will you convert this sulphide ore into the metal? Explain with equations.	3

	OR **B.** In the formation of a compound between two atoms P and R, P loses two electrons and R gains one electron. (i) What is the nature of the bond between P and R? (ii) Give the formula of the compound formed between P and R. (iii) Draw the electron-dot structure of $MgCl_2$ (iv) NaCl has high melting point. Why?	
28	The preparation of hydrogen gas is shown in the figure given below. What would happen if the following changes are made?  **(i)**. Instead of dilute sulphuric acid, dilute hydrochloric acid is taken **(ii)** In place of zinc, copper turnings are taken. Give reason for your answer. **Attempt either option (iii) or (iv)** **(iii)**. In place of zinc granules, the same amount of zinc dust is taken in the test tube. **OR** **(iv)**. Sodium hydroxide is taken in place of dilute sulphuric aciacid,d the tube is heated. Give equation for the reaction taking place.	4
29	**Attempt either option A or B.** **A**. A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion, forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved. **OR** **B.** (i) The molecular formula of two carbon compounds X and Y are C_4H_8 and C_5H_{12} respectively. Which one of the two is most likely to show addition reaction? Justify your answer. Also give the chemical equation to explain the process of addition reaction in this case. (ii) Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 at 443 K? Write the chemical equation for the reaction stating the role of conc. H_2SO_4 in this reaction.	5
	SECTION-C	
30	The diagrams showing the correct path of the ray after passing through a convex lens are -	1

	 A. II and III only B. I and II only C. I, II and III D. I, II and IV	
31	The image shows a light ray incident on a glass prism. The various angles are labelled in the image. Which angle shows the angle of incidence and angle of refraction, respectively? **A.** D and F **B**. C and F **C**. B and E **D.** A and D 	1
32	A ray of light is travelling in a direction perpendicular to the boundary of a parallel glass slab. The ray of light: **A.** is refracted towards the normal **B.** is refracted away from the normal **C.** is reflected along the same path **D**. does not get refracted	1
33	**Attempt either option A or B.** **A**. How you would connect three resistors each of resistance 6Ω, so that the combination has a resistance of 9Ω. Draw the circuit diagram for the same. **OR** **B.**  The electric circuit in the above figure is a cloth dryer contains two heaters X and Y in parallel. When both the switches are closed, the current in X is 3.5 A Analyse the circuit give above and answer the following questions: (i) Calculate the power developed in heater X, if heater X and Y both have same resistance. (ii) If the resistance of X is double than Y, Calculate the current in heater Y	2
34	**(i)**. For the same angle of incidence of 45^0, the refraction angle in two transparent media P and Q is 20^0 and 30^0 respectively. Which of the two is optically denser? Give reason for your answer. **(ii)**. Absolute refractive index of two media P and Q are 1.33 and 2.52 respectively. Calculate the speed of light in medium Q if speed of light in medium P is 2×10^8 m/s.	2

35	**Attempt either option A or B.** **A**. A straight cylindrical conductor is suspended with its axis perpendicular to the magnetic field of a horse shoe magnet. The conductor gets displaced towards the left when current is passed through it. What will happen to the displacement of the conductor if the: (i) Current through it is increased? (ii) Direction of current is reversed? (iii) Horse shoe magnet is replaced by another stronger horse shoe magnet? **OR** **B**. (i) Draw the pattern of magnetic field lines due to a magnetic field through and around a current carrying circular loop. (ii) Enlist any two properties of magnetic field lines.	3
36	**(i)**. A person suffering from presbyopia needs a bifocal lens. If he needs lenses of power +2.5D and -0.25D, which one of these two lenses is for the correction of distant vision and what is its focal length? **(ii)** With the help of a labelled diagram show the path followed by a narrow beam of mono-chromatic light is passed through a glass prism.	3
37	PQ is the current carrying conductor in the plane of the paper as shown in the figure. **(i)** Find the directions of the magnetic fields produced by it at points R and S? **(ii)** Given $r_1 > r_2$, where will the strength of the magnetic field be larger? Give reason to support your answer. (iii) Explain the rule that is used to find the direction of the magnetic field for a straight current carrying conductor.  	3
38	Study the data given below showing the focal length of the three concave mirrors A, B and C and the respective distances of objects placed in front of the mirror. **(i)** In which of the above cases the mirror will form a diminished image of the object? Justify your answer. **(ii).** List two properties of the image formed by mirror in case 2. **Attempt either option (iii) or (iv).** **(iii)**. What is the nature and size of the image formed by mirror C? Draw a ray diagram to justify your answer. **OR** **(iv)** An object is placed at a distance of 18cm from the pole of a concave mirror of focal length 12cm. Find the position of the image formed in this case.	4
39	**Attempt either option A or B.** **A**. (i) What is electrical resistivity? (ii) In a series electrical circuit comprising of a resistor having a metallic wire, the ammeter reads 5A. The reading of the ammeter decreases to half when the length of wire is doubled. Give reason. (ii) In the given circuit diagram, two resistance wires A and B are of same area of cross- section and same material but A is longer than B. Which ammeter A_1 or A_2 will indicate higher reading for current? Give reason.	5

Case	Mirror	Focal length (cm)	Object distance (cm)
1	A	20	45
2	B	15	30
3	C	30	20

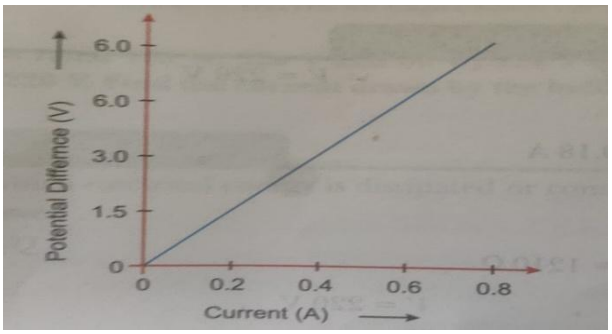


(iii) State Joule's law of heating. Give its mathematical expression**.**

OR

B. (i) State Ohm's law.

(ii) Name the physical quantity determined by the slope of V-I curve given in the diagram. Use this graph to find the value of this physical quantity in SI units.



(iii)A torch bulb is rated 5V and 500 mA. Calculate its: (a) power and (b) resistance.