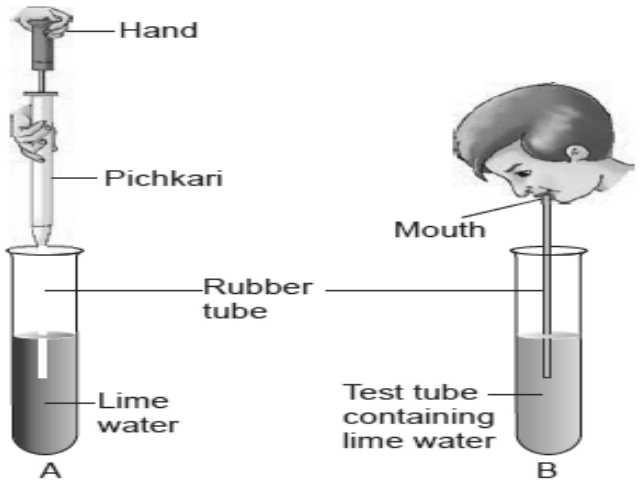
Kendriya Vidyalaya Sangathan, Mumbai Region
2nd Pre-Board Examination 2025-2026
Class X
Subject: SCIENCE (086)

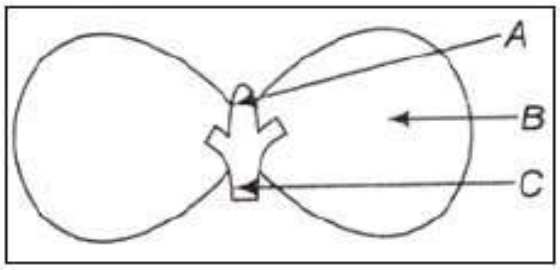
Time allowed: 3 hours **Maximum Marks:80**

General Instructions:

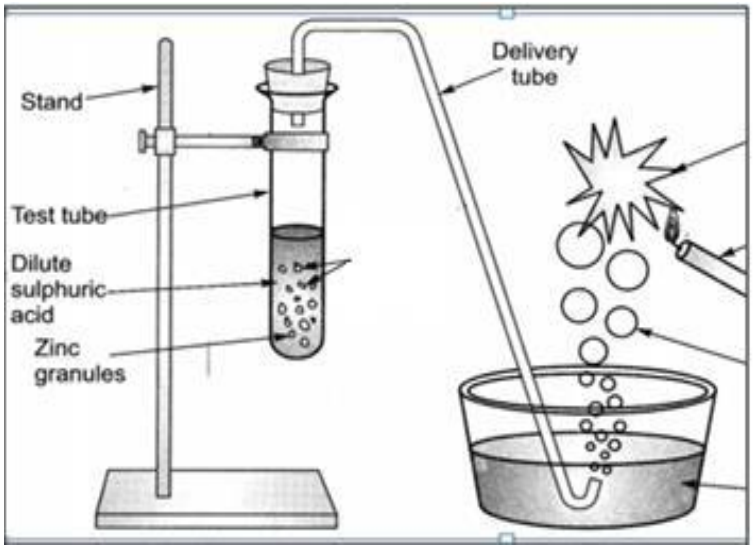
(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

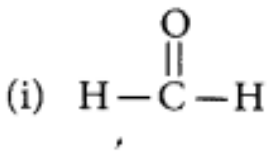
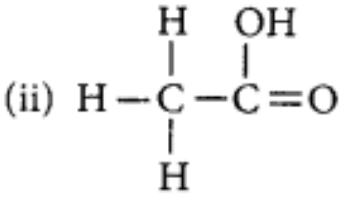
(ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

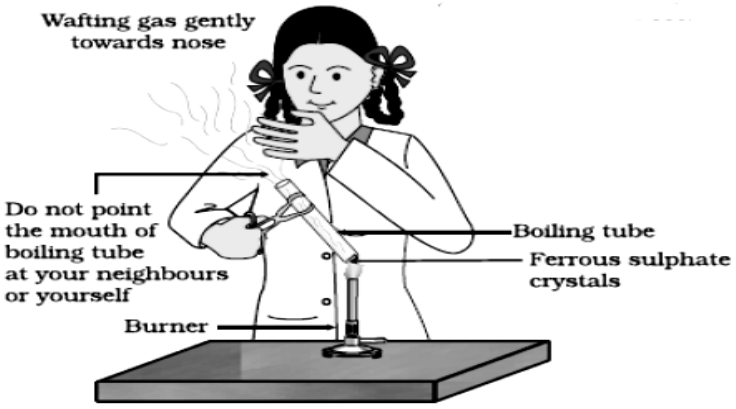
S.N.	SECTION-A	MARKS
1	Identify the correct path of urine in the human body. (a) Kidney → urinary bladder → urethra → ureter (b) Urinary bladder → ureter → kidney → urethra (c) Kidney → ureter → urethra → urinary bladder (d) Kidney → ureter → urinary bladder → urethra	1
2	A student sets up an experiment to study human respiration using lime water, test tube and a straw. Lime water is colourless in the absence of CO2 and is milky in its presence. The student fills a freshly prepared limewater in a test tube and blows air through straw into the limewater. It was observed that the solution turns cloudy as shown. What can be evaluated from this observation?  (a) Oxygen is exhaled during respiration. (b) Water vapours are produced during respiration. (c) Carbon dioxide is exhaled during respiration. (d) Glucose is produced during respiration.	1

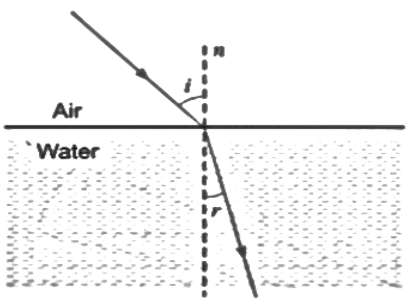
3	The main function of abscisic acid in plants is to (a) increase the length of cells (b) promote cell division (c) inhibit growth (d) promote growth of stem	1
4	In the below figure the parts A, B and C are sequentially  (a) Cotyledon, plumule and radicle (b) Plumule, radicle and cotyledon (c) Plumule, cotyledon and radicle (d) Radicle, cotyledon and plumule	1
5	Two pea plants, one with round green seeds (RR yy) and another with wrinkled yellow (rrYY) seeds, produce F_1 progeny that have round yellow (RrYy) seeds. When F_1 plants are self-pollinated, the F_2 progeny will have a new combination of characters. Choose the new combinations from the following: (i) Round, yellow (ii) Round, green (iii) Wrinkled, yellow (iv) Wrinkled, green (a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iii) (d) (i) and (iii)	1
6	Which of the following is responsible for the depletion of the ozone layer (a) CFCs (b) Oxygen (c) SO_2 (d) CO_2	1
7	Ozone hole may cause (a) Mutations (b) Global warming (c) Skin cancer (d) All of these	1
	Q8 and 9 consist of two statements – Assertion (A) and Reason (R). Answer the question 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, but (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) :**Vulture will always have the least amount of pesticides in a food chain. **Reason (R) :**Vulture occupies the last trophic level and it gets only 10% of energy of the previous trophic	1

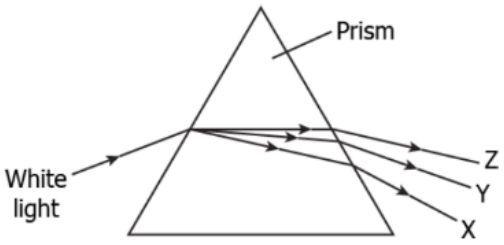
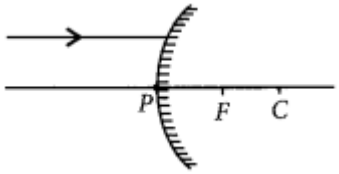
9	**Assertion (A) :** Animals can react to stimuli in different ways. **Reason (R) :** All animals have a nervous system and an endocrine system involving hormones.	1
10	Write two different ways in which glucose is oxidised to provide energy in human body. Write the products formed in each case	2
11	**Students to attempt either option A or B.** A. What are the methods used by plants to get rid of excretory products? (Write any four) **OR** B. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.	2
12	In the following food chain, plants provide 500 J of energy to rats. How much energy will be available to hawks from snakes? Plants → Rats → Snakes → Hawks	2
13	Write three types of blood vessels. Give one important feature of each	3
14	An old man is advised by his doctor to take less sugar in his diet. Name the disease from which the man is suffering. Mention the hormone due to imbalance of which he is suffering from this disease. Which endocrine gland secretes this hormone? **OR** (a) Define reflex arc. (b) Trace the sequence of events which occur in our body when a bright light is focussed on your eyes.	3
15	**Students to attempt either option A or B.** (A) (a)List any four methods of contraception used by humans. How does their use have direct effect on the health and prosperity of a family? (b) List two examples each of diseases caused due to (i) bacterial infection and (ii) viral infection. **OR** (B) (a)Write the functions of the following parts in human female reproductive system : (i) Ovary (ii) Oviduct (iii) Uterus (b) Describe the structure and function of placenta.	3+2 1+1+1 2
16	Pooja has green eyes while her parents and brother have black eyes. Pooja's husband Ravi has black eyes while his mother has green eyes and father has black eyes. Read the above passage carefully and give the answers of the following questions:	4

	(a) On the basis of the above given information, is the green eye colour a dominant or recessive trait? Justify your answer. (b) What is the possible genetic makeup of Pooja's brother's eye colour? (c) What is the probability that the offspring of Pooja and Ravi will have green eyes? Also, show the inheritance of eye colour in the offspring with the help of a suitable cross. **OR** (c)50% of the offspring of Pooja's brother are green eyed. With help of cross show how this is possible?	
	SECTION- B	
17	When Ag is exposed to air it gets a black coating of (a) $AgNO_3$ (b) Ag_2S (c) Ag_2O (d) Ag_2CO_3	1
18	Which of the following are exothermic processes? (i) Reaction of water with quick lime (ii) Dilution of an acid (iii) Evaporation of water (iv) Sublimation of camphor (crystals) (a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iv) (d) (ii) and (iv)	1
19	What will be observed in the reaction shown in the figure  	1

	(a) Carbon dioxide gas will be released (b) Hydrogen gas will be released with pop sound (c) Carbon dioxide gas will be released and solution become milky (d) Hydrogen gas along with carbon dioxide gas will be released	
20	Rain is called acid rain when its: (a) pH falls below 7 (b) pH falls below 6 (c) pH falls below 5.6 (d) pH is above 7	1
21	The highly reactive metals like Sodium, Potassium, Magnesium, etc. are extracted by the (a) electrolysis of their molten chloride (b) electrolysis of their molten oxides (c) reduction by aluminium (d) reduction by carbon	1
22	Name the functional group present in CH_3COCH_3. (a) Alcohol (b) Carboxylic acid (c) Ketone (d) Aldehyde	1
23	C_3H_8 belongs to the homologous series of (a) Alkynes (b) Alkenes (c) Alkanes (d) Cyclo alkanes	1
	The following questions consist of two statements – Assertion (A) and Reason (R). Answer the question 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, but (R) is not the correct explanation of (A).** **(c) (A) is true, but (R) is false.** **(d) (A) is false, but (R) is true.**	
24	**Assertion (A):** Zinc can easily displace copper on reacting with a solution of copper sulphate. **Reason (R):** Copper is more reactive metal as compared to Zinc.	1
25	Define the term functional group. Identify the functional group present in (i)  (ii) 	2

26	**<u>Students to attempt either option A or B.</u>** A)  2 g of ferrous sulphate crystals are heated in a dry boiling tube. (a) List any two observations. (b) Name the type of chemical reaction taking place. (c) Write balanced chemical equation for the reaction and name the products formed. **OR** B) Lead nitrate solution is added to a test tube containing potassium iodide solution. (a) Write the name and colour of the compound precipitated. (b) Write the balanced chemical equation for the reaction involved. (c) Name the type of this reaction justifying your answer.	3
27	During electrolysis of brine, a gas 'G' is liberated at anode. When this gas 'G' is passed through slaked lime, a compound 'C' is formed, which is used for disinfecting drinking water. (i) Write formula of 'G' and 'C'. (ii) State the chemical equations involved. (iii) What is common name of compound 'C' ? Give its chemical name	3
28	**<u>Attempt either option A or B.</u>** (A) An organic compound 'A' has the molecular formula C2H6O and is a common solvent and the active ingredient in alcoholic beverages. When 'A' is warmed with alkaline potassium Permanganate solution, it gets converted to an organic acid 'B'. When 'A' and 'B' are heated together in the presence of a few drops of concentrated sulphuric acid, a new compound 'C' with a fruity smell is formed. (a) Identify the compounds 'A', 'B', and 'C'. (b) Write the balanced chemical equation for the conversion of 'A' to 'B'. (c) What is the general name for the process of Formation of 'C'? (d) Draw the electron dot structure for compound 'A'. (e) What is the role of concentrated sulphuric acid in the formation of 'C'? **OR**	5

	(B) Carbon is an element that forms the basis for all life. It belongs to Group 14 of the periodic table and exhibits unique properties. (a) What is the valency of Carbon? Name the property of carbon which allows it to form long chains with itself. (b) Carbon exists in various forms with different physical properties but identical chemical properties. What are these different forms called? Name one hard and one soft crystalline form. (c) Draw the structure of the hard crystalline form you named in part (b). (d) What type of bonds are present in compounds of carbon? Give a reason why these compounds are generally poor conductors of electricity. (e) Write the name and draw the electron dot structure of the simplest compound formed between carbon and hydrogen	
29	Read the following and answer the question given below: A student, took four metals P,Q,R and S and carried out different experiments to study the properties of metals. Some of the observations were: * All metals could not cut with knife except metal R. * Metal P combined with oxygen to form an oxide M_2O_3 which reacted with both acids and bases. * Reaction with water P- Did not react either with cold or hot water but reacted with steam. Q- Reacted with hot water and the metal started floating. R- Reacted violently with cold water. S- Did not react with water at all. Based on the above observations answer the following: (a) Identify metal Q out of Fe, Zn, K, and Mg? Give reason. (b) Identify metal which forms amphoteric oxide. (c) Arrange the metals in increasing order of reactivity. Give reason. **OR** (c)Which metal is kept in kerosene oil and why?	4
	SECTION- C	
30	A ray of light travelling in air enters obliquely into water. The light ray will (a) Not at all bend (b) bend away from the normal (c) Bend towards the normal (d) will bend in any direction  	1

31	The image shows the dispersion of the white light in the prism. What will be the colours of the X, Y and Z? (a) X: red; Y: green; Z: violet (b) X: violet; Y: green; Z: red (c) X: green; Y: violet; Z: red (d) X: red; Y: violet; Z: green 	1
	The following questions consist of two statements – Assertion (A) and Reason (R). Answer the question 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, but (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):** Danger signals are made of red colour. **Reason (R):** Wavelength of red light in air is maximum and scatters the least, so signals are visible even in dark.	1
33	**<u>Attempt either option A or B.</u>** (A) A ray of light is incident on a convex mirror as shown. Redraw the diagram and complete the path of this ray after reflection from the mirror. Mark angle of incidence and angle of reflection on it.  **OR** (B) Name the type of mirrors used in the design of solar furnaces. Explain how high temperature is achieved by this device.	2
34	Three 2 Ω resistors A, B and C are connected in such a way that the total resistance of the combination is 3 Ω. Show the arrangement of the three resistors and justify your answer.	2
35	**<u>Attempt either option A or B.</u>** (A) What is 'dispersion of white light'? State its cause. Draw a ray diagram to show the dispersion of white light by a glass prism **OR** (B) A person cannot read newspaper placed nearer than 50 cm from his eyes. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this defect. List	3

	its two possible causes. Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.	
36	Give reasons for the following: (a) It is dangerous to touch the live wire of the main supply rather than neutral wire. (b) In household circuit, parallel combination of resistances is used. (c) Using fuse in a household electric circuit is important.	3
37	What are magnetic field lines? How is the direction of a magnetic field at a point determined? Draw the magnetic field lines (including field directions) of the magnetic field due to a circular coil of current. Name any two factors on which the magnitude of the magnetic field due to this coil depends	3
38	**<u>Students to attempt either option A or B.</u>** (A) A student, Rohan, is conducting an experiment to investigate the relationship between the length of a wire and its resistance. He uses a nichrome wire of different lengths and measures the resistance using a multimeter. Rohan observes that as the length of the wire increases, the resistance also increases. (a) What is the relationship between the length of a wire and its resistance? Explain with the help of the experiment conducted by Rohan. (b) If Rohan doubles the length of the wire, what will happen to the resistance? Assume the wire has a uniform cross-sectional area. (c) What would happen to the resistance if Rohan uses a wire of the same length but with a larger cross-sectional area? (d) Rohan wants to reduce the resistance of the wire. Suggest two ways he can do so. (e) If Rohan uses a copper wire instead of nichrome wire, how will it affect the resistance? Explain your answer. **OR** (B) (A) An electric iron consumes energy at a rate of 880 W when the heating is at the maximum rate and 330 W when the heating is at the minimum. If the source voltage is 220 V, calculate the current and resistance in each case. (B) What is the heating effect of electric current? (C) Find an expression for the amount of heat produced when a current passes through a resistor for some time	5
39	Every car today is fitted with rear-view mirrors for safety purposes. The outside rear-view mirror is specially designed to give a wider field of view so that the driver can see vehicles coming from behind. These mirrors are made slightly curved outward and provide an image that looks smaller than the actual object, but helps cover a larger	4

	portion of the road. That is why the message "Objects in the mirror are closer than they appear" is written on such mirrors. This practical application is based on the principle of image formation by spherical mirrors. (a) Which type of spherical mirror is used here concave or convex? (b) State two characteristics of the image formed in such a mirror for distant objects. (c) For a convex mirror of focal length f =+ 30cm, a vehicle is u =− 500cm from the mirror. Find the image distance v. **OR** (c) If focal length of a mirror is -25cm, identify the type of mirror. Also, comment on the nature of image if object is kept at its focus.	