

KENDRIYA VIDYALAYA SANGATHAN, CHANDIGARH REGION

PREBOARD II - 2025-26

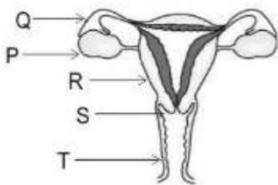
CLASS: X SUBJECT: SCIENCE

MARKS:80

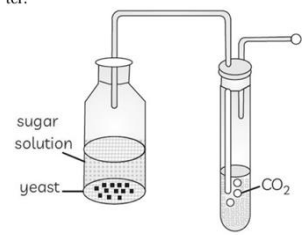
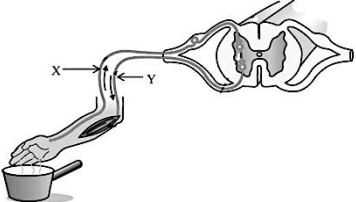
TIME:3 HOURS

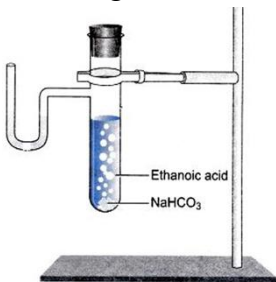
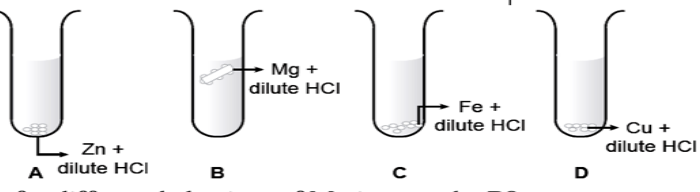
Instructions:

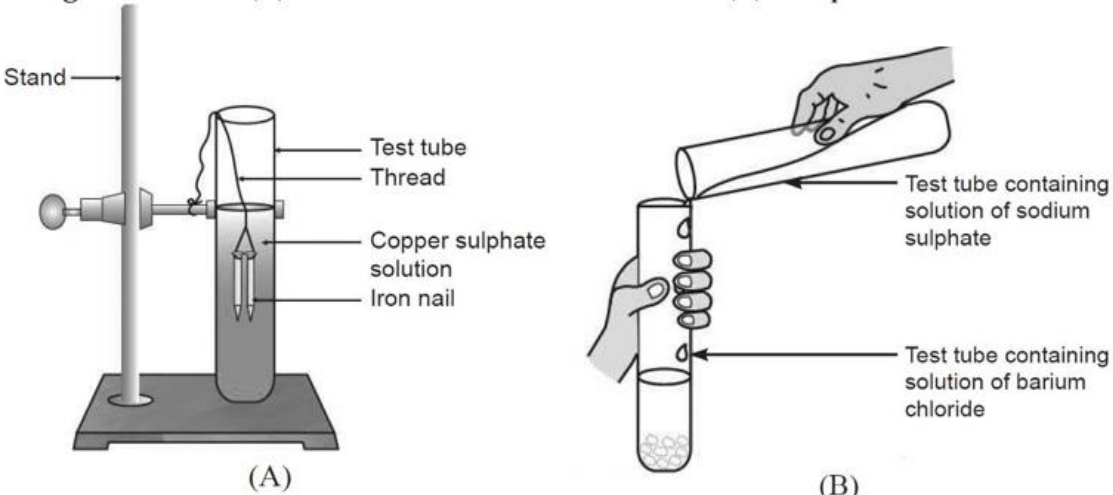
- (i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
- (ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

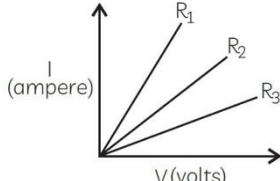
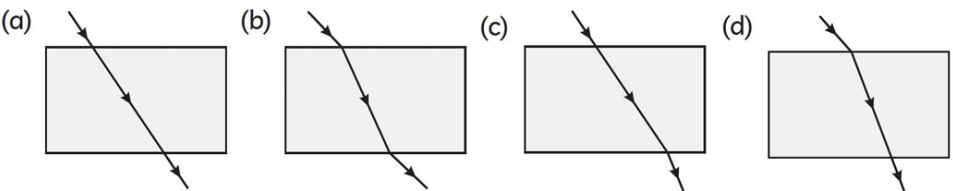
Q.No	SECTION A	MARKS
1	Arrange the following steps in the correct sequence to describe the process of absorption and elimination of food in the human digestive system 1. Waste material is expelled from the body through the anus 2. Water is absorbed from the unabsorbed food in the large intestine 3. Food is transported to every cell in the body through blood vessels. 4. Unabsorbed food moves into the large intestine. 5. Digested food is absorbed by the villi in the large intestine. (a) 3,4,1,2,5 (b) 1,3,4,5,2. (c) 5,3,4,2,1. (d) 3,1,4,2,5	1
2	Which of the following describes the flow of energy and nutrients, respectively, through the ecosystem? a) Bidirectional and cyclic b) Unidirectional and cyclic c) Cyclic and bidirectional d) Cyclic and unidirectional	1
3	Tubectomy is a method of contraception in females. The diagram represents the human female reproductive system with some of its parts marked P, Q, R, S, T.  Identify the labelled part that will be operated on for 'tubectomy' in females. A. P. B. Q. C. R. D. Both S and T.	1
4.	A certain class of herbicides does not allow pollen tube formation. Which of the following processes will it stop? A. Cross-pollination B. Self-pollination	1

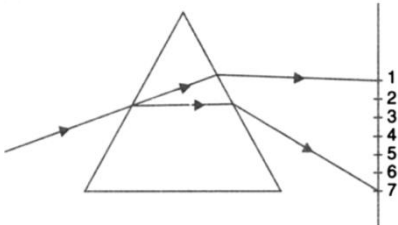
	C. Seed dispersal D. Fertilisation							
5.	Fishes like swordfish and king mackerel are tertiary consumers. Fishes like tilapia and salmon are secondary consumers. The habitat of these fishes are usually contaminated with heavy metals like mercury. Scientists suggest consuming these fishes according to the table given below: <table border="1"><tr><td>Best to avoid (1 serving/ month)</td><td>Good to eat (2-3 servings/week)</td></tr><tr><td>King mackerel</td><td>Tilapia</td></tr><tr><td>Swordfish</td><td>Pollock</td></tr></table> What phenomenon is likely to have led the scientists to give such an advisory to the people who consume fish? A. Degradation B. Biomagnification C. Eutrophication D. Energy flow	Best to avoid (1 serving/ month)	Good to eat (2-3 servings/week)	King mackerel	Tilapia	Swordfish	Pollock	1
Best to avoid (1 serving/ month)	Good to eat (2-3 servings/week)							
King mackerel	Tilapia							
Swordfish	Pollock							
6.	Identify the example that BEST describes a response to a stimulus. A. Absorption of sunlight by chloroplast B. Germination of pollen grains on the stigma C. Absorption of nutrients from the soil through root hairs D. Transportation of water and nutrients through the xylem	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.								
7.	Assertion (A): The purpose of making urine is to filter out undigested food from intestine. Reason (R): Kidneys filter the waste and produce urine.	1						
8.	Assertion (A): Acquired traits cannot be passed from one generation to next generation. Reason (R): Inaccuracy during DNA copying of acquired trait is minimum.	1						
9.	<u>Attempt either subpart A or B.</u> A. i) List the respiratory pigment present in our body. Where is it present? ii) Why are valves present in heart and veins? OR B. How many chambers are there in the heart of the following organisms? How is mixing of oxygenated and deoxygenated blood prevented in their body? (i) Fishes (ii) Humans	2						
10.	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) Make a cross and list your observations regarding: (i) Colour of stem in their F1 progeny (ii) Percentage of brown stemmed plants in F2 progeny if plants are self-pollinated.	2						
11.	What is the probability of a girl or a boy being born in a family? Justify your answer.	3						
12.	(i) Why are budding, fragmentation and regeneration all considered as asexual types of reproduction? (ii) With neat diagrams explain the process of regeneration in Planaria.	3						
13.	Sahil performed an experiment to study the inheritance pattern of genes. He crossed tall pea plants (TT) with short pea plants (tt) and obtained all tall plants in F1 generation.	3						

	(i) What will be set of genes present in the F1 generation? (ii) Give reason why only tall plants are observed in F1 progeny. (iii) When F1 plants were self-pollinated, a total of 800 plants were produced. How many of these would be tall, medium height or short plants? Give the genotype of F2 generation. OR When F1 plants were cross - pollinated with plants having tt genes, a total of 800 plants were produced. How many of these would be tall, medium height or short plants? Give the genotype of F2 generation.	
14.	In an activity, a student Siya took some fruit juice or sugar solution and added some yeast to this. She took this mixture in a test tube fitted with a one-holed cork and fitted the cork with a bent glass tube. She dipped the free end of the glass tube into a test tube containing freshly prepared lime water. Siya observed that lime water turned milky after few hours. (i) What does this activity suggest to you? (ii) What are the products formed during this activity? (iii) Name the energy currency in living organisms. When is it produced? One application of energy currency produced in the cell.	4
		
15.	(a) Describe how human beings use hormonal system to react to a dangerous situation. (b) How do sensory and motor neurons differ from one another? (c) How is the movement of leaves of a sensitive plant different from the movement of a shoot towards light? OR (a) In the diagram given below, name the labelled parts X and Y. Mention one function for each.  (b) Name the parts of the nervous system which are involved in the following activities: (i) Maintaining body posture (ii) Salivation (iii) Breathing (iv) Answering a question	5
SECTION B		
16.	A student adds an equal amount of copper sulphate solution in two beakers. He adds zinc in beaker P and silver in beaker Q. The student observes that the color of the solution in beaker P changes while no change is observed in beaker Q. Which option arranges the metals in increasing order of reactivity? (a) Copper-silver-zinc (b) Zinc-copper-silver (c) Silver-copper-zinc (d) Silver-zinc-copper	1
17.	A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue? (a) Lemon juice	1

	(b) Vinegar (c) Common salt (d) An antacid	
18.	Why do we store silver chloride in dark-coloured bottles? (a) To prevent precipitation of silver chloride (b) To prevent decomposition of silver chloride (c) To promote decomposition of silver chloride (d) All of these	1
19.	Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved?  (i) It turns lime water milky (ii) It extinguishes a burning splinter (iii) Dissolves in a solution of sodium hydroxide (iv) It has a pungent odour A. (i) and (ii) B. (i), (ii) and (iii) C. (ii), (iii) and (iv) D. (i) and (iv)	1
20.	 tube B? (A) Mg is lighter element than dil. HCl. (B) Mg reacts with dil. HCl to produce H ₂ gas which helps in floating. (C) Mg reacts with dil. HCl to produce N ₂ gas which helps in floating. (D) Mg reacts with dil. HCl to produce CO ₂ gas which helps in floating.	1
The following question 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.		
21.	Assertion (A) : The acid must always be added to water with constant stirring. Reason (R) : Mixing of an acid with water decreases the concentration of H ⁺ ions per unit volume.	1
22.	Name the substance that is used to prepare false ceilings and used by doctors for setting fractured bones. How is this substance prepared?	2

23.	 (A) (B) A student observes the reactions taking place in (A) and (B). Among other changes, he observed the change in colour in (A) and formation of insoluble solid in (B) set up. (a) Identify the type of reactions in the set up (A) and (B). (b) Write a balanced chemical equation of reactions in set up (A) and (B).	2
24.	What happens when 'X' reacts with H_2 in presence of Ni or Pd to form 'Y'? 'Y' on reaction with chlorine in presence of sunlight gives 'Z'. Identify X, Y and Z. What type of reaction is Y to 'Z'? OR An organic compound A is widely used as a preservative in pickles and has a molecular formula. This compound reacts with ethanol to form a sweet-smelling compound B. a) Identify the compound A AND Compound B. b) Write the chemical equation for its reaction with ethanol to form compound B. c) How can we get compound A back from B.	3
25.	Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether this compound sodium hydrogen carbonate is acidic, basic or neutral. Also, write its pH value.	3
26.	(a) Explain why carbon forms covalent bond? Give two reasons for carbon forming a large number of compounds. (b) (i) Explain the formation of ammonia molecule. OR (b) (ii) State what happens when ethanol is heated with excess conc. H_2SO_4 at 443 K. Draw the structure of the product formed and state the role of conc. H_2SO_4 in the reaction.	4
27.	A metal 'X' combines with a non-metal 'Y' by the transfer of electrons to form a compound Z. (i) State the type of bond in compound Z. (ii) What can you say about the melting point and boiling point of compound Z? Justify (iii) Show the formation of bond between Magnesium and oxygen	1+2+2

	OR (a) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores. (b) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.	1+4
SECTION C		
28.	For a current in a long straight solenoid N-pole and S-pole are created at the two ends. Among the following statements, the incorrect statement is: (A) The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid. (B) The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil. (C) The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet. (D) The N-pole and S-pole exchange position when the direction of current through the solenoid is reversed.	1
29.	A student carries out an experiment and plots the V - I graph of three samples of nichrome wire with resistances R₁, R₂ and R₃ respectively as shown in figure. Which of the following is true? (A) R₁ = R₂ = R₃ (B) R₁ > R₂ > R₃ (C) R₃ > R₂ > R₁ (D) R₂ > R₃ > R₁ 	1
30.	The path of a ray of light coming from air passing through a rectangular glass slab is traced by four students shown as A, B, C and D in the figure. Which one of them is correct? 	1
31.	When a 4V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. The value of the resistance of the resistor is: (A) 4 Ω (B) 40 Ω (C) 400 Ω (D) 0.4 Ω	1
32.	Arnav was making notes and he wrote down the following statements from his understanding of reflection from curved surfaces. I. Concave mirrors can produce both real and virtual images depending on the position of the object. II. Convex mirrors always produce real, inverted images regardless of the object's position. III. In both concave and convex mirrors, the image location can be determined using the mirror formula $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ where f is the focal length, v is the image distance, and u is the object distance. Choose from the following the correct option that lists the correct statements about	1

	reflection from curved surfaces. A. I and II B. I, II and III C. II and III D. I and III	
The following question 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.		
33.	Assertion (A): Strength of an electromagnet can be increased by increasing the number of turns per unit length in solenoid coil. Reason(R): Strength of an electromagnet can be increased by increasing the current flowing through the solenoid.	1
34.	An electric oven of 2 kW power rating is operated in a domestic electrical circuit of 220 V that has a current rating of 5 A. What result do you expect? Explain. OR Two lamps, one rated 100 W; 220 V, and the other 60 W; 220 V, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is 220 V.	2
35.	Why is the sun visible to us 2 minutes before actual sunrise and 2 minutes after actual sunset?	2
36.	Rakesh performed the experiment to study the dispersion of light by a glass prism and drew the following figure.  (a) The color at position marked 3 and 5 are similar to the colour of the sky and the color of gold metal respectively. Is the above statement made by the student correct or incorrect? Justify. (b) Which of the above shown positions correspond approximately to the colour of: (i) a solution of copper sulphate ? (ii) danger or stop signal lights?	3
37.	(i) What is an electromagnet? List any two uses. (ii) Draw a labelled diagram to show how an electromagnet is made. OR (i) Draw a pattern of magnetic field formed around a current carrying solenoid. What happens to the magnetic field when the current through the solenoid is reversed? (ii) Why is it that if a current carrying coil has n turns the field produced at any point is n times as large as that produced by a single turn?	3
38.	Read the source below and answer the questions that follow: When an electric current passes through a conductor (like a high resistance wire) the conductor becomes hot after some time and produces heat. This is called heating effect	4

	of electric current or joule heating or ohmic heating or resistive heating. The heating effect of electric current is widely used in our day- to-day life. The electric laundry iron, electric toaster, electric bulb, fuse and electric heater are some of the familiar devices based on Joule's heating. i. Write the mathematical expression for Joule's law of heating. ii. The following table gives the resistivity of three samples: <table><tr><td>Sample</td><td>A</td><td>B</td><td>C</td></tr><tr><td>Resistivity</td><td>$1.6 \times 10^{-5} \Omega\text{m}$</td><td>$5.2 \times 10^{-5} \Omega\text{m}$</td><td>$100 \times 10^{-5} \Omega\text{m}$</td></tr></table> Which of them is suitable for heating elements of electrical appliances and why? iii. Why does the cord of an electric heater not glow while the heating element does? iv. State a difference between the wire used in the element of an electric heater and in a fuse wire. Or iv. Tungsten is used almost exclusively for filaments of electric bulb. List two reasons.	Sample	A	B	C	Resistivity	$1.6 \times 10^{-5} \Omega\text{m}$	$5.2 \times 10^{-5} \Omega\text{m}$	$100 \times 10^{-5} \Omega\text{m}$	
Sample	A	B	C							
Resistivity	$1.6 \times 10^{-5} \Omega\text{m}$	$5.2 \times 10^{-5} \Omega\text{m}$	$100 \times 10^{-5} \Omega\text{m}$							
39.	A student wants to project the image of a candle flame on a screen 60 cm in front of a mirror by keeping the candle flame at a distance of 15 cm from its pole. (a) Which type of mirror should the student use? (b) Find the magnification of the image produced. (c) Find the distance between the object and its image. (d) Draw a ray diagram to show the image formation in this case and mark the distance between the object and its image. OR (a) Name the lens which can be used as a magnifying glass. For which position of the object a convex lens form: (i) a real and inverted image of the same size as that of the object? (ii) a virtual and erect image? Draw ray diagram to justify your answer in each case. (b) One half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Draw ray diagram to justify your answer.	5								