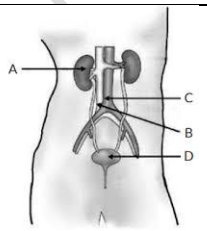
SPECTRA PRACTICE PAPER (2025-2026)
CLASS-Xth
SUBJECT: SCIENCE

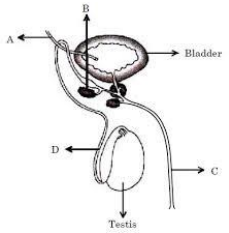
DURATION: 3 HRS. **M MARKS:80**

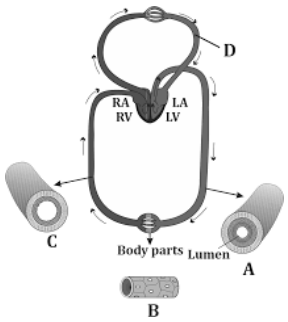
General Instructions:

(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.

	Section - A (Biology)	Marks
1.	Which of the correct sequence of air passage during inhalation? (a) Nostrils → larynx → pharynx → trachea → lungs (b) Nasal passage → trachea → larynx → larynx → alveoli (c) Larynx → nostrils → pharynx → lungs (d) Nostrils → pharynx → larynx → trachea → alveoli	1
2.	In the give diagram , A, B C and D respectively are (a) A - Left kidney ; B - Aorta; C - Vena cava; D- Urethra (b) A - Left kidney ; B - Vena cava; C - Aorta; D - Urinary bladder (c) A - Right kidney ; B - Aorta ; C - Ureter ; D - Urethra (d) A - Right kidney ; B - Vena cava ; C - Aorta ; D - Urinary bladder 	1
3.	In a person the tubule part of the nephron is not functioning at all. What will its effect be on urine formation? (a) The urine will not be formed. (b) Quality and quantity of urine is unaffected. (c) Urine is more concentrated. (d) Urine is more diluted.	1
4.	Fertilization is the process of (a) Transfer of male gamete to female gamete (b) Fusion of nuclei of male and female gamete (c) Adhesion of male and female reproductive organs. (d) The formation of gametes by a reproductive organ.	1
5.	Select the incorrect statement . (a) Food we eat is digested by various enzymes in our body. (b) Non-biodegradable substance are not broken down by biological processes. (c) All enzymes have same action on each substance. (d) Plastics cannot be broken down by the action	1
6.	A cross between pea plant with white flowers (VV) and pea plant with violet flowers (VV) resulted in F_2 progeny in which ratio of violet (VV) and white (VV) flowers will be : (a) 2: 1 (b) 2: 1 (c) 3: 1 (d) 1 :3	1
7.	What will happen if the deer are missing in the following food chain ? Grass → Deer → Tiger (a) The population of tiger will increase. (b) The amount of grass will decrease. (c) The tiger will die. (d) The tiger will start eating grass.	1

8.	Assertion (A) : Human population show a great deal of variations in traits. Reason (R) : All variations in a species have equal chances of surviving in the environment in which they live. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of the Assertion (A) (c) Assertion (A) is true, but Reason (R) is False. (d) Assertion (A) is false, but Reason (R) is true.	1
9.	Assertion (A) : Greater number of individuals are present in lower trophic levels. Reason (R) : The flow of energy is unidirectional. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of the Assertion (A) (c) Assertion (A) is true, but Reason (R) is False. (d) Assertion (A) is false, but Reason (R) is true.	1
10.	Name the glands present in the wall of the stomach that release secretions for digestion of food. Write the three components of secretion that are released by these glands. **Or** What will happen if : (a) Xylem tissue in a plant is removed? (b) We are injured and start bleeding?	2
11.	Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?	2
12.	What is ozone? How is it formed in the upper layers of the earth's atmosphere?	2
13.	State the function of each of the following plant hormones: (a) Gibberellins (b) Auxins Abscisic acid	3
14.	A species of mammal has two phenotypes, white fur and brown fur. Below table show the parent genotypes Genotype / Phenotype Ww / White fur Ww / White fur ww / Brown fur (i) Draw a punnett square to show how an individual with white fur and an individual with brown fur produce a generation, F_1 ; all with white fur. (ii) How do the individuals from F_1 produce a generation F_2 , with both white and brown fur mammals ?	3
15.	Based on the given diagram answer the questions given below: (a) Label the parts A, B, C and D. (b) Name the hormone secreted by testis and mention its role. (c) State the functions of B and C in the process of reproduction. 	5

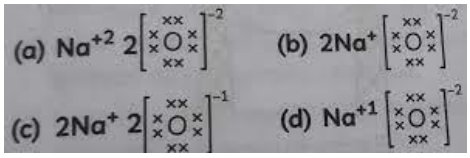
16.	1. Read the passage given below and answer the following questions: Double circulation is a type of circulating system in which the blood passes through the heart twice before completing a full circuit of the body. Blood is pumped from the heart to the lungs and returns to the heart before being being distributed to other organs and tissue of the body. (i) What is the role of four chambers of heart in double circulation ? (ii) Enlist two animals that shows double circulatory pathway. (iii) The figure shows blood circulation in humans with lebels A to D. Identify A to D and write functions of each part. **OR** (iii) Write the correct sequence of pulmonary circulation.	 1 1 2 2
	Section -B (Chemistry)	
17.	Which one of the following reactions is categorized as thermal decomposition reaction? (a) $2H_2O$ (l) → $2H_{2(g)}$ + $O_{2(g)}$ (b) 2AgBr (s) → 2Ag(s) + Br_2(g) (c) 2AgCl (s) → 2Ag (s) + Cl_2 (g) (d) $CaCO_3$ (s) → CaO (s) + CO_2 (g)	1
18.	Which of the following statements is correct? Rusting of iron is a chemical change because (a) A new substance with new properties produced (b) Chemical composition of reactant is changed (c) Change is permanent and cannot be reversed easily (d) All of these	1
19.	In the reaction with copper sulphate solution : $CuSO_4$ + Fe → Cu + $FeSO_4$ Which option in the given table correctly represents the substance oxidized and the reducing agent?	1

Substance Oxidized	Reducing Agent
(a) Fe	Fe
(b) Fe	$FeSO_4$
(c) Cu	Fe
(d) $CuSO_4$	Fe

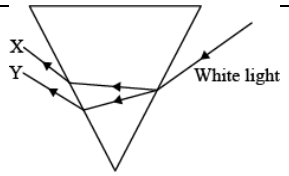
20.	Consider the following compounds (i) HCl (ii) C_2H_5OH (iii) $C_6H_{12}O_6$ (iv) H_2SO_4 Which of these compounds do not conduct electricity in solution ? (A) I and II (B) II and III (C) III and IV (D) I and IV	1
21.	The chemical formula for plaster of Paris is (a) $CaSO_4.2H_2O$ (b) $CaSO_4.H_2O$ (C) $CaSO_4.\frac{1}{2}H_2O$ (D) $2CaSO_4.H_2O$	1

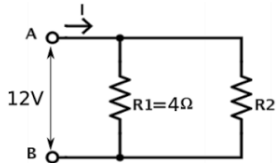
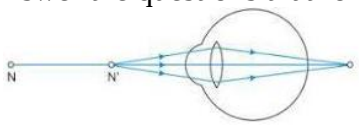
2	A cable manufacturing unit tested few elements on the basis of their physical properties. Which of the above elements were discarded for usage by the company ? (a) W, X, Y (b) X, Y, Z (c) W, X, Z (d) W, Y, Z	1

Properties	W	X	Y	Z
Malleable	Yes	No	No	Yes
Ductile	Yes	No	No	Yes
Electrical Conductivity	Yes	Yes	Yes	No
Melting Point	High	Low	Low	High

2	Which of the following is the correct electronic configuration arrangement of sodium oxide?  	1
2	Assertion (A): Ethanoic acid is also known glacial acetic acid. Reason (R): The melting point of pure ethanoic acid is 290 K and hence it often freezes during winters in clod climates. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of the Assertion (A) (c) Assertion (A) is true, but Reason (R) is False. (d) Assertion (A) is false, but Reason (R) is true.	1
2	A pale green solution of ferrous sulphate was taken in four separate test tubes marked I, II , III and IV. Pieces of Cu, Zn and Al were dropped in test tubes II, III and IV respectively . In which case(s) (a) The colour of ferrous sulphate solution will match will the colour in test tube (I) ? Give reason. (b) The colour of ferrous sulphate solution will fade and black mass will be deposited on the surface of the metal?	2
2	1g of copper powder was taken in a China dish and heated. What change taken place on heating? When hydrogen gas is passed over this heated substance, a visible change is seen in it. Give the chemical equations of reactions, the name and the colour of the products formed in each case.	3

2	Priya heated ethanol with a compound A in presence of a few drops of concentrated sulphuric acid and observed a sweet smelling compound B is formed. When B is treated with sodium hydroxide it gives back ethanol and a compound C. (a) Identify A and C. (b) Give one use each of compound A and B. (c) Write the chemical reaction involved and name the reactions. OR Write the chemical equation for the following: (i) Combustion of methane (ii) Oxidation of ethanol (iii) Hydrogenation of ethane (iv) Esterification reaction (v) Saponification reaction	5
2	The metals produced by various reduction processes are not very pure. They contain impurities, which must be removed to obtain pure metals. The most widely used method for refining impure metals is electrolytic refining. (i) What is the cathode and anode made of in the refining of copper by this process? (ii) Name the solution used in the above process and write its formula. (iii) (A) How copper gets refined when electric current is passed in the electrolytic cell? OR (iv) (B) You have two beakers 'A' and 'B' containing copper sulphate solution. What would you observe after about 2 hours if you dip a strip of zinc in beaker 'A' and a strip of silver in beaker 'B'? Give reason for your observations in each case.	1 1 2
	Section - C (Physics)	
2	An object of height 3.0 cm is placed vertically on the principal axis of a convex lens. when the object distance is -37.5 cm, an image of height -2.0 cm is formed at a distance of 25.0 cm from the lens. Next, the same object is placed vertically at 25.0 cam form the lens. In this situation the image distance v and height h of the image is (according to the new Cartesian sign convention) (a) v = + 37.5 cm; h = +4.5 cm (b) v = - 37.5 cm; h = +4.5 cm (c) v = + 37.5 cm; h = - 4.5 cm (d) v = - 37.5 cm; h = - 4.5 cm	1
3	In the diagram given below , X and Y are the end colours of the spectrum of white light. The colour of 'Y' represents the (a) Colour of sky as seen from earth during the day (b) Colour of the sky as seen from the moon (c) Colour used to paint the danger signals. (d) Colour of sun at the time of noon.	1
3	Assertion (A) : The SI unit of power of lens is 'dioptre'. Reason (R) : The power of a concave lens is positive and that of a convex lens is negative. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A) (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of the Assertion (A) (c) Assertion (A) is true, but Reason (R) is False. (d) Assertion (A) is false, but Reason (R) is true.	1



3	The linear magnification produced by a spherical mirror is +3. Analyse this value and state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw a ray diagram to show the formation of image in this case.	2
3	A student has two resistors 2 Ω and 3 Ω. She has to put one of them in place of R_2 as shown in the circuit. The current that she needs in the entire circuit is exactly 9A. Show by calculation which of the two resistors she should choose. 	2
3	Study the diagram given below and answer the questions that follow :  (i) Name the defect of vision represented in the diagram. Give reason for your answer. (ii) List two causes of this defect. (iii) With the help of a diagram show how this defect of vision is corrected.	3
3	It would cost a man ₹ 3.50 to buy 1.0 kWh of electrical energy from the main electricity board. His generator has a maximum power of 2.0kW. The generator produces energy at this maximum power for 3 hours. Calculate how much it would cost to buy the same amount of energy from the main electricity board. (b) A student boils water in an electric kettle for 20 minutes. Using the same mains supply he wants to reduce the boiling time of water. To do so should he increase or decrease the length of the heating element? Justify your answer.	3
3	(i) A straight cylindrical conductor is suspended with its axis perpendicular to the magnetic field of a horse-shoe magnet. The conductor gets displaced towards left when a current is passed through it . What will happen to the displacement of the conductor if the 1. Current through it is increased? 2. Horse-shoe magnet is replaced by another stronger horse-shoe magnet? 3. Direction of current through it is reversed? (ii) Name and state the rule of determining the direction of force on a current carrying conductor in a magnetic field.	3
3	(a) The equivalent resistance of series combination of four equal resistors is S. If they are joined in parallel, the total resistance is P. The relation between S and P is given by S = nP, then what is the minimum possible value of n? (b) Show how would you join the three resistors, each of resistance 9 Ω so that the equivalent resistance of the combination is (i) 3.5 Ω , (ii) 6 Ω ?	5
3	Study the data given below showing the focal length of three concave mirrors A, B and C and the respective distances of objects placed in front of the mirrors : (i) In which one 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 in case 2. (iii) (A) What is the nature and size of the image formed by mirror C ? Draw ray diagram to justify your answer. OR (iii) (B) An object is placed at a distance of 18 cm from the pole of a concave mirror of focal length 12 cm . Find the position of the image in this case.	1 1 2 2