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

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

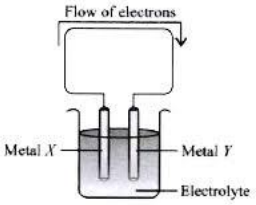
	Section- A (Biology)	Marks
1.	Glomerular filtration is possible because (a) Afferent arteriole has less diameter than the efferent arteriole (b) Afferent arteriole has more diameter than the efferent arteriole (c) Both have the same diameter (d) Afferent capillaries have more diameter than the efferent capillaries.	1
2.	As compared to terrestrial organisms, the rate of breathing in aquatic organisms is : (a) Faster because they need more oxygen for their survival (b) Faster because the amount of dissolved oxygen in water is fairly low (c) Slower because the amount of dissolved oxygen in water is fairly low (d) Slower because the capacity of water of dissolving atmospheric air is limited.	1
3.	In a neuron, The conversion of electric signal to chemical signal occurs atin. (a) Dendrite end (b) Cell body (c) Axon end (d)Myelin sheath	1
4.	The flow of energy in an ecosystem is always. (a) Unidirectional (b) Bidirectional (c) Multidirectional (d) Cyclic.	1
5.	In a flower ,The parts that produce male and female gametes are respectively (a) Sepal and anther (b) Filament and stigma (c)Anther and ovary (d) Stigma and Style	1
6.	Height of a plant is regulated by (a) DNA which is directly influenced by growth hormone (b) Genes which regulate the proteins directly (c) Growth hormones under the influence of the enzymes coded by a gene (d) Growth hormones directly under the influence of a gene.	1
7.	Food web is constituted by (a) Relationship between the organisms and the environment (b) Relationship between plants and animals (c) Various interlinked food chains in an ecosystem (d) Relationship between animals and environment.	1
8.	Assertion (A) : The traits that are obtained form parents are inherited traits. Reason (R) : Inherited traits were developed in the parents during their lifetime. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R not is the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
9.	Assertion (A) : Ozone is present in the layer of earth's atmosphere. Reason (R) : Ozone is a gas released by burning fuels. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R not is the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1

10.	Give reasons why circulation of blood in aquatic vertebrates differs from that in terrestrial vertebrates.	2
11.	Give reason for the following: (i) 'Touch me not' plant get shrink when touched . (ii) Plants move due to growth.	2
12.	State with reason any two possible consequences of elimination of decomposers form the earth.	2
13.	(a) Explain any three directional movements in plants. (b) How brain and spinal cord are protected in human? **OR** (a) What are cranial nerves? How many cranial nerves does a human being have? (b) Write the difference between cerebellum and cerebrum.	3
14.	How do Mendel's experiments show that the traits are inherited independently? Explain.	3
15.	(a) Explain the surgical method of contraception used by (i) Males, and (ii) Females to prevent fertilisation (b) Write the role of oral pills taken by women as a contraceptive . (c) How does their use have a direct effect on the health and prosperity of a family?	 1 1 1 2
16.	A green stemmed rose plant denoted by GG and a brown stemmed rose plant denoted by gg are allowed to cross bred with each other. (a) What will be the colour of stem in their F_1 progeny ? (b) Based on the findings of this cross, what conclusion can be drawn? (c) What will be the percentage of brown stemmed plants in F_2 progeny if plants are self pollinated? **OR** What will be the ratio of F_2 progenies when plant with genotype Gg crossed with gg?	 1 1 2 2
	Section - B (Chemistry)	
17.	Ferrous sulphate on heating gives ferric oxides. Two gases that accompany the reaction are (a) $SO_2 + O_2$ (b) $SO_2 + SO_3$ (c) $SO_3 + O_2$ (d) $SO_2 + N_2$	1
18.	The equation $Cu + xHNO_3 \rightarrow Cu(NO_3)_2 + yNO_2 + 2H_2O$ The values of x and y are (a) 3 and 5 (b) 8 and 6 (c) 4 and 2 (d) 7 and 1	1
19.	$MnO_2 + 4HCl \rightarrow 2MnCl_2 + 2H_2O + Cl_2$ Identify the substance oxidized in the above equation. (a) $MnCl_2$ (b) HCl (c) H_2O (d) MnO_2	1
20.	When 2mL of sodium hydroxide solution is added to few pieces of granulated zinc in a test tube and then warmed, the reaction that occurs can be written in the form of a balanced chemical equation as : (a) $NaOH + Zn \rightarrow NaZnO_2 + H_2O$ (b) $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2$ (c) $2NaOH + Zn \rightarrow NaZnO_2 + H_2$ (d) $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2O$	1

21. What is the basic information shown by given figure? **1**

(a) Warning : Containers contain concentrated acids and bases.
(b) Warning : Containers contain dilute acids and bases.
(c) Warning : Containers contain flammable substances.
(d) Warning : Containers contain explosive substances.

22. Observe the given figure carefully **1**



For which pair of metals would electrons flow in the direction shown?

	Metal X	**Metal Y**
(a)	Copper	Zinc
(b)	Iron	Aluminium
(c)	Iron	Magnesium
(d)	Zinc	Silver

23. The ration of HCl and HNO_3 in Aqua Regia is : **1**

(a) 3:2 (b) 3:1 (c) 1:3 (d) 2:3

24. Assertion (A) : If the first member of a homologous series in methanal, its third member will be propanal. **1**

Reason (R) : All the members of a homologous series show similar chemical properties.

(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, and R not is the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

25. Name an ore of zinc other than zinc oxide. By what process this ore be converted into zinc oxide? **2**

26. Write the balanced chemical equation for the following reaction : **3**

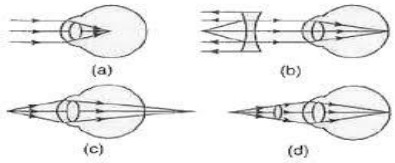
(i) Phosphorus burns in presence of chlorine to form phosphorus pentachloride.
(ii) Burning of natural gas.
(iii) The process of respiration.

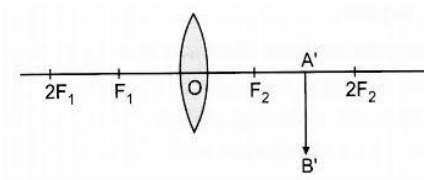
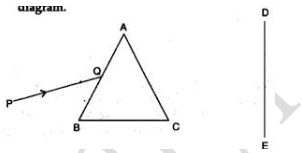
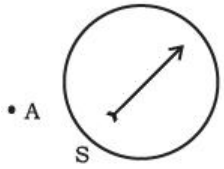
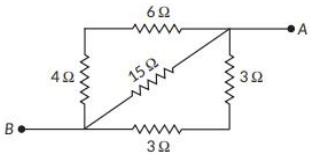
27.

Metal	$FeSO_4$	$CuSO_4$	$ZnSO_4$	$AgNO_3$	$Al_2(SO_4)_3$
A	No Change	No Change	No Change	Coating on metal	No Change
B	Grey Deposit on metal	Brown Coating on metal	No Change	Coating on metal	No Change
C	No Change	No Change	No Change	No Change	No Change
D	No Change	……..	No Change	Coating on metal	No Change
E	……	Brown Coating	New Coating	New Coating	No Change

Based on the observations recorded in the table, answer the following:

(i) Which is the most reactive metal? 1/2
(ii) Which is the less reactive metal? 1/2
(iii) What would be observed if metal D were added to a solution of copper (II) sulphate? 1/2
(iv) What would be observed if metal E were added to a solution of iron (II) sulphate? 1/2
(v) Arrange the metals A, B, C, D and E in decreasing order of their reactivity ? 1

28.	(a) Draw electron dot structure of propene molecule. (b) Identify the functional groups present in the following compounds : (i) C_2H_6O (ii) C_2H_4O (c) A mixture of oxygen and ethyne is burnt for welding. Why do you think a mixture of ethyne and air is not used for welding? **Or** An organic compound A is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$.This compound reacts with ethanol to form a sweet smelling compound B. (i) Identify the compound A. (ii) Write the chemical equation for its reaction with ethanol to form compound B. (iii) How can we get compound A form B? (iv) Name the process and write corresponding chemical equation. (v) Which gas is produced when compound A reacts with washing soda? Write the chemical equation.	2 1 2 5
29.	Baking soda is used in small amounts for making bread and cakes. It helps to make these soft and spongy. An aqueous solution of baking soda turns red litmus blue. It is also used in soda acid fire extinguisher. Use this information to answer the following questions. (a) Is the pH value of baking soda solution lower than or higher than 7 ? (b) Write the equation for the reaction between baking soda and acid. (c) How does the reaction between baking soda and acid help in extinguishing fire? **OR** (c) Write the formula as well as one use of each of the following - baking soda and washing soda.	 1 1 2 2
	Section C- (Physics)	
30.	Figure (a), (b) , (c) and (d) respectively correspond to  (a) The short-sighted eye, the correction of short-sightedness, the long-sighted eye and the correction of long-sightedness (b) The long-sighted eye, the correction of short-sightedness, the short-sighted eye and the correction of long-sightedness (c) The short-sighted eye, the correction of long-sightedness, the long-sighted eye and the correction of short-sightedness (d) The short-sighted eye, the correction of long-sightedness.	1
31.	An object is placed 25 cm from a convex lens whose focal length is 10cm. The image distance is (a) 50 cm (b) 16.66 cm (c) 6.66 cm (d) 10 cm	1
32.	Assertion : A concave lens of very short focal length causes higher divergence than one with longer focal length. Reason (R) : The power of a lens is directly proportional to its focal length. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R not is the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1

33.	Observe the following incomplete ray diagram of an object where the image A'B' is formed after refraction from a convex lens. On the basis of above information fill in the blanks. (i) The position of object AB would have been …. (ii) Size of the object would have been …. than the size of image. 	2
34.	What is (a) the highest, (b) the lowest total resistance that can be secured by combination of four coils of resistance 4Ω , 8Ω, 12Ω, 24Ω ?	2
35.	A narrow beam PQ of white light is passing through a glass prism ABC as shown in the diagram. Trace it on your answer sheet and show the path of the emergent beam as observed on the screen DE. (i) Write the name and cause of the phenomenon observed. (ii) Where else in nature is this phenomenon observed? (iii) Based on this observation, state the conclusion which can be draw about the constituents of white light. 	3
36.	(i) An electric motor takes 5A from a 220V line. Determine the power of motor and the energy consumed in 2 h. (ii) An electric heater of resistance 8Ω draws 15A from service mains for 2 hours. Calculate the rate at which heat is developed in the heater.	3
37.	A magnetic compass needle is placed in the plane of paper near point A as shown in the figure. (i) In which plane should a straight current - carrying conductor be placed so that it passes through A and there is no change in the deflection of the compass? (ii) Under what condition is the deflection maximum and why? 	3
38.	(a) List two disadvantages of using a series circuit in homes. (b) Calculate the effective resistance between A and B in the circuit given below: 	5
39.	The refractive index of a medium concerning vacuum is called the absolute refractive index of the medium. It is given by, $\mu = \frac{sini}{sinr}$ Absolute refractive indices of some of the materials A, B, C and D are given in the following table. (a) How is the absolute refractive index related to the speed of light? (b) In which of the material given in the above table, light travels fastest? (c) The speed of light in air is 3×10^8 m/s and that in medium X is 2.5×10^8 m/s. Then, find the refractive index of medium X. **OR** If the refractive index of P concerning Q is 2. Then, find the refractive index of Q concerning P.	1 1 2 2

Medium	Refractive Index
A	1.54
B	1.33
C	2.42
D	1.65