SHRI GULABRAO ESHWARA KHANDVE EDUCATIONAL FOUNDATION,

JAGADGURU INTERNATIONAL SCHOOL, LOHEGAON PUNE

TERM I EXAMINATION (2024-2025)

Class: X A **Subject: Science (086)**
Date: 23/09/2024 **M.M.: 80**
Roll No. : **Time: 3 Hrs**

General Instructions

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with subparts.
8. Write your answers neatly and present your answers properly.

S.No	Section A	Marks
1.	To balance the following chemical equation, the values of the coefficients x, y and z must be respectively: $x\ Zn(NO_3)_2 \xrightarrow{\Delta} y\ ZnO + z\ NO_2 + O_2$ (a) 4, 2, 2 (b) 4, 4, 2 (d) 2, 2, 4 (d) 2, 4, 2	1
2.	Which of the following is a redox reaction, but not a combination reaction? (a)$C + O_2 \rightarrow CO_2$ (b) $2H_2 + O_2 \rightarrow 2H_2O$ (c) $2Mg + O_2 \rightarrow 2MgO$ (d) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$	1
3.	$Mg(s)+CuO(s) \longrightarrow MgO(s)+Cu(s)$ This equation represents: (a) decomposition reaction as well as displacement reaction (b) combination reaction as well as double displacement reaction (c) redox reaction as well as displacement reaction (d) double displacement reaction as well as redox reaction	1
4.	The salt present in tooth enamel is: (a) Calcium phosphate (b) Magnesium phosphate (c) Sodium phosphate (d) Aluminium phosphate	1
5.	Which salt is acidic in nature? (a) NH_4Cl (b) CH_3COONH_4 (c) NaCl (d)Na_2CO_3	1
6.	The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is (a) Blue (b) Colourless (c) Dirty green (d) Reddish Brown	1
7.	In human beings, when the process of digestion is completed, the(i)proteins (ii)	1

	carbohydrates, and(iii) fats are respectively finally converted into a) i) amino acids, ii) glucose and iii) fatty acids. b) i) amino acids, ii) glucose, iii) fatty acids and glycerol c) i) glucose, ii) fatty acids and glycerol, ii)i amino acids d) i) sugars, ii) amino acids, iii) fatty acids and glycerol	
8.	Which is the correct sequence of air passage during inhalation? (a) Nostrils→larynx→pharynx→trachea→lungs (b) Nasal passage→trachea→pharynx→larynx→alveoli (c) Larynx→nostrils→pharynx→lungs (d) Nostrils→pharynx→larynx→trachea→alveoli	1
9.	The correct sequence of events when someone's hand touches a hot object unconsciously: (a) Receptors in skin → Motor neuron → Relay neuron → Sensory neuron → Effector muscle in arm (b) Receptors in skin → Relay neuron → Sensory neuron → Motor neuron → Effector muscle in arm (c) Receptors in skin → Sensory neuron → Relay neuron → Motor neuron → Effector muscle in arm (d) Receptors in skin → Sensory neuron → Effector muscle in arm → Motor neuron → Relay neuron	1
10.	Which part of the brain regulates the body temperature? a) Hypothalamus b) Thalami c) Pituitary d) Medulla oblongata	1
11.	Which one of the following statements is not correct? (a) The rainbow is produced by the reflection of white sun light by water drops in the atmosphere. (b) The blue colour of the sky is due to scattering of light. (c) The stars appear higher in the sky than actually are, due to scattering of light. (d) The planets twinkle at night due to atmospheric refraction of light.	1
12.	The phenomenon of light involved in the formation of rainbow are: (a) Refraction, dispersion and scattering. (b) Refraction, reflection and dispersion. (c) Refraction, dispersion and internal reflection. (d) Reflection, dispersion and internal reflection	1
13.	When we enter a dark room coming from outside, immediately the things inside the room do not appear clear to our eyes. This is because: (a) pupils do not open at all (b) pupils take time to adjust (c) light travels slower in a dark room. (d) pupils open very quickly in the dark room.	1
14.	Which part of the eye produces maximum refraction of light rays? (a) Lens (b) Pupil (c) Retina (d) Cornea	1
15.	What type of image is formed on the retina? (a) Virtual and inverted (b) Real and inverted (c) Virtual and erect (d) Real and erect	1
16.	The image formed by a mirror is virtual. The mirror is (a) Concave (b) convex (c) may be concave or convex (d) none of these	1

Q.No 17 to 20 are Assertion – Reasoning based questions.

These consist of two statements – Assertion (A) and Reasoning (R).

Answer these questions selecting the appropriate option given below.

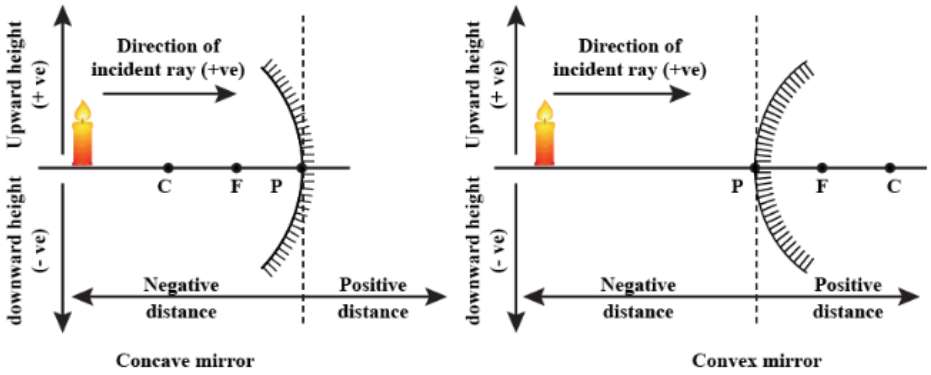
a) Both A and R are true and R is the correct explanation of A.

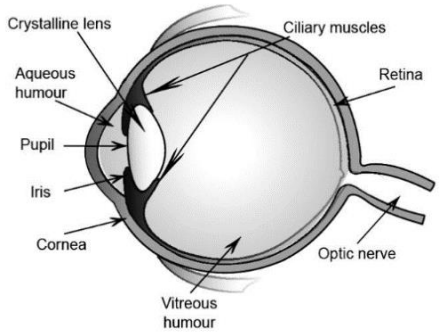
b) Both A and R are true and R is not the correct explanation of A.

c) A is true but R is false. d) A is false but R is true.

17.	Assertion (A): Eye lens has the ability to focus clearly on the retina by adjusting its focal length. Reason (R): This phenomenon is known as power of accommodation.	1
18.	Assertion(A): Silver bromide decomposition is used in black and white photography. Reason (R): Light provides energy for this exothermic reaction.	1
19.	Assertion(A):The brain is also known as central nervous system. Reason(R):Central nervous system controls and regulates voluntary actions.	1
20.	Assertion (A): A hypermetropic person prefers to remove his spectacles, while driving. Reason (R): When a hypermetropic person wearing spectacles looks at a distant object, the parallel rays from the distant object get converged in front of the retina. The image thus appears blurred.	1
	SECTION B	
21.	Name the acid present in ant sting. Also give the common method to get relief from the discomfort caused by the ant sting.	2
22.	(a) Copper powder is taken in a china dish and heated over a burner. Name the product formed and state its colour. Write the chemical equation for the reaction involved. **OR** (b) Write chemical equation for the chemical reaction which occurs when the aqueous solutions of barium chloride and sodium sulphate react together. Write the symbols of the ions present in the compound precipitated in the reaction.	2
23.	Rajesh observed a patch of greenish black powdery mass on a stale piece of bread. a)Name the organism responsible for this and its specific mode of asexual reproduction. b) Name its vegetative and reproductive parts.	2
24.	Why do arteries have thick and elastic walls whereas veins have valves?	2
25.	State the laws of refraction.	2
26	Why does the colour of sky appear blue? Explain in brief. **OR** What type of spectacles should be worn by a person having the defects of myopia as well as hypermetropia? How does it help?	2
	SECTION C	
27.	Answer the following questions in the context of electrolysis of water : (a) Why is this reaction/process called a decomposition reaction? (b) Giving reason state whether this reaction is exothermic or endothermic. (c) Name the gases collected at the anode and cathode. (d) What is the mass ratio of the gases collected at the anode and cathode?	3

28.	Write the common name and the chemical name of the compound $CaSO_4.\frac{1}{2}H_2O$. Write the method of its preparation. Give chemical equation for the reaction, when water reacts with $CaSO_4.\frac{1}{2}H_2O$.	3
29.	Draw the structure of a neuron and explain its function.	3
30.	A cross was made between green- stemmed tomato plants denoted by (GG) and purple-stemmed tomato plants denoted as (gg) to obtain F1 progeny. a) What colour of the stem would you expect in their F1 progeny and why? b) Give the percentage of purple-stemmed plants if F1 plants are allowed to self-pollinate to produce F2 progeny. c) Write the ratio between GG and gg plants in the F2 progeny.	3
31.	How are the modes of reproduction different in unicellular and multicellular organisms?	3
32.	You are given a convex lens of focal length 10 cm. Where will you place an object to get a real, inverted and highly enlarged image of the object? Draw a ray diagram.	3
33.	(a) State the relationship between focal length and radius of curvature of a spherical mirror. (1) (b) Why is the refractive index of a medium always greater than one? (1) (c) A lens has -4 D power. Is the lens concave or convex? (1)	3
	SECTION D	
34.	(a) A few crystals of ferrous sulphate were taken in a dry boiling tube and heated. Tiny water droplets were observed in the tube after some time. (i) From where did these water droplets appear? Explain. (ii) What colour change will be observed during heating? (iii) How many molecules of water are attached per molecule of FeSO4 crystal ? Write the molecular formula of crystalline forms of (I) Copper sulphate, and (II) Sodium carbonate. (iv) State how is Plaster of Paris obtained from gypsum. Write two uses of Plaster of Paris. OR An acid 'X' present in tamarind when mixed with 'Y', produces a mixture of 'Z'. 'Z' on addition to a dough when heated makes cake soft and spongy. 'Y' is prepared from common salt and helps in faster cooking. (i) Write the common names of 'X', 'Y' and 'Z', and the chemical formula of 'Y' (ii) How is 'Y' prepared and how does it help in making cake soft and spongy? Illustrate the reaction with suitable chemical equation. (iii) Write the name and chemical formula of a mild base other than 'Y' used as an antacid.	5
35.	i)Name the hormone required for the following. Also mention the name of endocrine gland from which that hormone is secreted. a) Lowering of blood glucose. b) Development of moustache and beard in human males. c)Metabolism of carbohydrates, fats and proteins. ii)How is the timing and amount of hormone released regulated? Explain with an example.	5

36.	While dealing with the reflection of light by spherical mirrors, we shall follow a set of sign conventions called the New Cartesian Sign Convention. In this convention, the pole (P) of the mirror is taken as the origin. The principal axis of the mirror is taken as the x - axis of the coordinate system. In a spherical mirror, the distance of the object from its pole is called the object distance (u). The distance of the image from the pole of the mirror is called the image distance (v). Magnification produced by a spherical mirror gives the relative extent to which the image of an object is magnified with respect to the object size. It is expressed as the ratio of the height of the image to the height of the object. It is usually represented by the letter (m).  (i) How can you calculate the magnification of a spherical mirror? (1) (ii) What does a negative sign in the value of magnification indicates? (1) (iii)Find the focal length of a convex mirror whose radius of curvature is 32 cm. (1) (iv)Why does the height of the object is taken to be positive? (1) (v) Find the nature of mirror if the focal length is +12cm. (1) **OR** Write the nature of image and the place of image when the image is formed by a concave mirror when an object is placed: (i) between pole and focus of the mirror (1) (ii) between focus and centre of curvature of the mirror (1) (iii) at centre of curvature of the mirror (1) (iv) a little beyond the centre of curvature of the mirror (1) (v) at infinity. (1)	4
	SECTION E	
37.	Salts play a very important role in our everyday life. Sodium chloride which is known as common salt is used in almost every kitchen. Baking soda is also a salt used in faster cooking as well as in baking industry. The family of salts is classified on the basis of cations and anions present in them. (a) Identify acid and base from which sodium chloride is formed. (1) (b) Find the anion and the cation present in calcium sulphate. (1) (c) "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement. (2) **Or** (c) Define the term pH scale. Name the salt obtained by the reaction of Potassium hydroxide and Sulphuric acid and give the pH value of its aqueous solution. (2)	4

38.	The mechanism by which the sex of an individual is determined is called sex-determination. In human beings, sex of a newborn is genetically determined, whereas in some others it is not. There are46(23 pairs) chromosomes in human beings. Out of these,44(22pairs) control the body characters and 2(one pair) are known as sex chromosomes. The sex chromosomes are of two types-X chromosome and Y chromosome. At the time of fertilization, depending upon which type of male gamete fuses with the female gamete, the sex of the newborn child is decided. a) Why is a pair of sex chromosome in human beings called a mismatched in terms of type and size? b) If the gametes always have half the number of chromosomes, then how is the original number of chromosomes restored in the organisms? c)Name two animals whose sex is not genetically determined. Explain the process of their sex determination. d)Site one example, Justify the statement "Sex of an individual is not always determined genetically."	4
39.	The human eye is like a camera. Its lens system forms an image on a light-sensitive screen called the retina. Light enters the eye through a thin membrane called the cornea. It forms the transparent bulge on the front surface of the eyeball as shown in the figure. The crystalline lens merely provides the finer adjustment of focal length required to focus objects at different distances on the retina. We find a structure called iris behind the cornea. Iris is a dark muscular diaphragm that controls the size of the pupil. The pupil regulates and controls the amount of light entering the eye. There are mainly three common refractive defects of vision. These are (i) myopia or nearsightedness, (ii) hypermetropia or far-sightedness, and (iii) Presbyopia. These defects can be corrected by the use of suitable spherical lenses.  (i) What is the function of pupil in the human eye? (1) (ii) What is the far point and near point of human eye with normal vision? (1) (iii) A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from? (1) (iv) What is the function of iris in human eye? (1) **OR** Observe the following diagram and answer the questions. (i) Which type of defect is shown in the diagram? (1) (ii) A person with this defect cannot see which objects distinctly- nearby or far away?(1) (iii) What is another name for this defect? (1) (iv)Which type of lens is used to correct this defect? (1)	