KENDRIYA VIDYALAYA SANGATHAN HYDERABAD REGION

FIRST PREBOARD EXAMINATION

(2024-25) CLASS – X

TIME ALLOWED: 3HRS **SCIENCE (Set 2)**

MAX.MARKS: 80

General Instructions: -

i. **This question paper consists of 39 questions in 5 sections.**

ii. **All questions would be compulsory. However, an internal choice of approximately 33% would be provided in some questions. 50% are to be allotted to competency-based questions.**

iii. **Section A would have 16 simple/complex MCQs and 04 Assertion-Reason type questions carrying one mark each.**

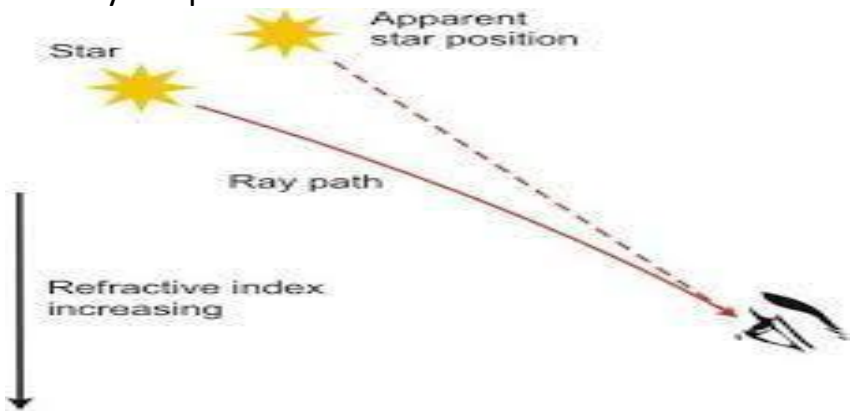
iv. **Section B would have 06 very short answer (VSA) type questions carrying 02 marks each.**

v. **Section C would have 07 short answer (SA) type questions carrying 03 marks each.**

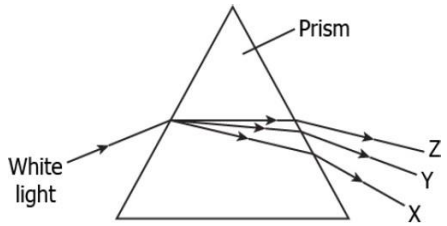
vi. **Section D would have 03 long answer (LA) type question carrying 05 marks each.**

vii. **Section E would have 03 source based / case-based/passage based/integrated units of assessments of 04 marks each with sub-parts of the values of 1/2/3 marks.**

Section-A **Question 1 to 16 are multiple choice questions. Only one of the choice is correct. Select and write the correct choice as well as the answer to these questions.**		
Q.No.	Questions	Marks
1.	Amalgam is a homogeneous mixture of a) Metal and mercury b) Metal and nonmetal c) Metal and a metal d) All of these	1
2.	A substance added to food containing fats and oils to prevent it from oxidation is called: (a)Oxidant (b)Rancid (c)Coolant (d)Antioxidant	1

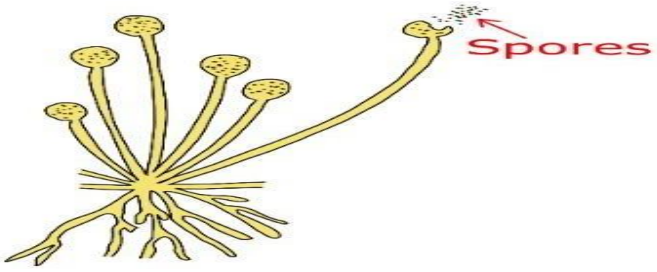
3	Name the substances whose build up in the muscles during vigorous physical exercise may cause cramps? (a) Ethanol + Carbon dioxide + Energy (b) Lactic acid + Energy (c) Carbon dioxide + Water + Energy (d) Pyruvate	1
4	A leaf is boiled in alcohol before using iodine for starch test in order to (a) Dissolve starch (b) Dissolve chlorophyll (c) Softening the leave (d) To kill the enzyme	1
5	The radius of curvature of a converging mirror is 20cm the focal length is a) 10cm b) -10cm c) 40cm d) -40cm	1
6	The movement of a plant part in response to the force of attraction exerted by the earth is called: (a) Hydrotropism (b) Geotropism (c) Chemotropism (d) Phototropism	1
7	Identify the phenomena shown in the below  a) reflection of light b) atmospheric refraction c) scattering of light d) dispersion of light	1

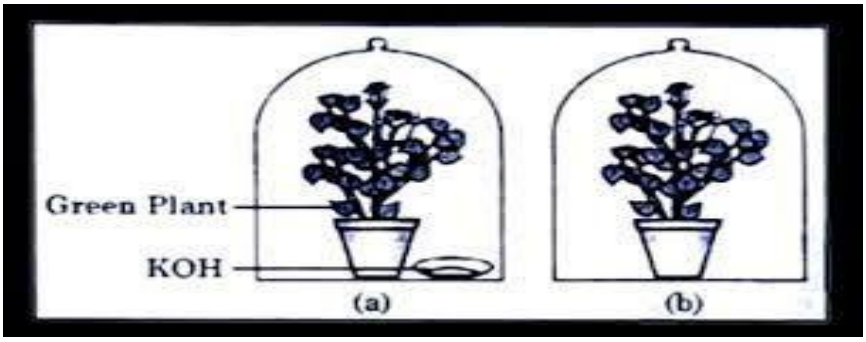
8	In terms of acidic strength, which one of the following is in the correct increasing order? (a) Water < Acetic acid < Hydrochloric acid (b) Water < Hydrochloric acid < Acetic acid (c) Acetic acid < Water < Hydrochloric acid (d) Hydrochloric acid < Water < Acetic acid	1
9	Sodium carbonate is a basic salt because it is a salt of a (a) strong acid and strong base (b) weak acid and weak base (c) strong acid and weak base (d) weak acid and strong base	1
10	In plants the role of absissic acid is- a) promote cell division. b) wilting of leaves. c) promote the opening of stomatal pore. d) help in the growth of stem.	1
11	Which of the following events in the mouth cavity will be affected if salivary amylase is lacking in the saliva? (a) Starch breaking down into sugars. (b) Proteins breaking down into amino acids. (c) Absorption of vitamins. (d) Fats breaking down into fatty acids and glycerol	1
12	On adding dilute sulphuric acid to a test tube containing a metal 'X', a colourless gas is produced. when a burning match stick is brought near the mouth of test tube, it burns with pop sound. Which of the following correctly represents metal 'X'? a) Sodium b) Zinc c) Copper d) Silver	1

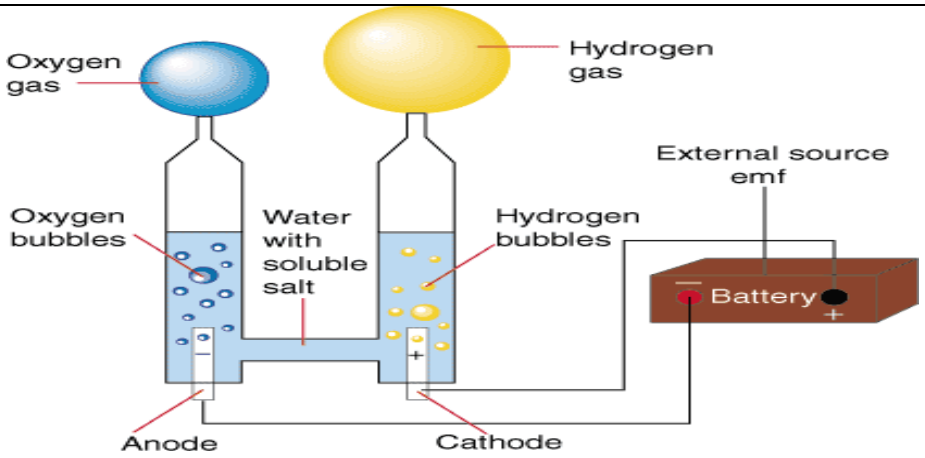
13	A student adds an equal amount of copper sulphate solution in two beakers, P and Q He adds zinc in beaker P and silver in beaker Q. The student observes that the color of the solution in beaker P changes while no change is observed in beaker Q. Which option arranges the metals in increasing order of reactivity? a) silver-zinc-copper b) zinc-copper- silver c) silver-copper-zinc d) copper-silver-zinc	1
14	The biotic components of an ecosystem consist of a) Plants and animals b) Algae and fungi c) Producers, consumers & decomposers d) Air, water, soil	1
15	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
16	In a given food chain if the amount of energy at the fourth trophic level is 6 kJ, what will be the energy available at the producer level? (a) 6000 kJ. (b) 6 kJ. (c) 60 kJ (d) 600 kJ	1

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (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) :** White silver chloride turns grey in sunlight. **Reason (R)** : Decomposition of silver chloride in presence of sunlight takes place to form silver metal and chlorine gas.	1
18	**Assertion(A)**: When Zinc rod is dipped into aqueous solution of copper sulphate, the colour of the solution changes. **Reason(B)**: Zinc being more reactive displaces less reactive copper from its aqueous solution resulting in the formation of Zinc sulphate which is colourless.	1
19	**Assertion(A):** In sexual reproduction two DNA copies pass into the offsprings from one parent. **Reason(R):** Gametes are formed as a result of meiosis cell division.	1
20	**Assertion(A):** Vegetarian food habit is more beneficial to organisms. **Reason(R):** Only 10% energy is available as food from one trophic level to next.	1
SECTION-B **Question No.21 to 26 are very short answer questions**		
21	Various organisms use different methods. Look at the given diagram carefully—  a) Name the organism and also the type of asexual reproduction shown. b) Mention any one advantage of this method of Reproduction	2
22	A concave mirror has a focal length of 20cm. At what distance from the mirror should a 4 cm tall object be placed so that it forms an image at a distance of 30 cm from the mirror? Also calculate the size of the image formed.	2

23	Teacher while conducting experiment in chemistry laboratory advised the students to add acid in water not water in acid. Why?	2
24	Balance the following chemical equations. a) $Al_2(SO_4)_3$ +NaOH ---> $Al(OH)_3$ + Na_2SO_4 b) $Mg(OH)_2$ + HCl --> $MgCl_2$ + H_2O	2
25	Justify the following (a) The existence of decomposers is essential in a biosphere (b) Flow of energy in a food chain is unidirectional OR What is tropic level? Draw a terrestrial food chain with five tropic levels.	2
26	Two green plants are kept separately in bell jar containers, as shown in the diagram.  In which of the above bell jar the process of photosynthesis will not take place? What does these experiments prove. Give reason for this observation	2
SECTION-C **Question No. 27 to 33 are short answer questions**		
27	Electrolysis is a process of decomposition of an electrolyte by the passage of electricity through the aqueous solution or molten (fused) state. During the electrolysis of water as shown in the diagram given below :-	3

	 (a) Why are the amounts of gases collected in the two test tubes are of not the same volume? (b) What type of reaction is this? (c) Why should we use salt water? Or A white powder is added while baking bread and cakes to make them soft and fluffy. Write the name of the powder? Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction that takes place when the powder is heated during the baking process.	
28	In a cross between plants with purple flowers and plants with white flowers, the FI had all purple flowers. When F1 generation was self-breed, the F2 generation gave rise to 100 individuals, 75 of which had purple flowers. (a) Make a cross and answer. (b) What are the genotypes of F2 individuals? (c) What is the ratio of white to purple flower plants in F2 generation?	3
29	a) Draw a neat diagram of a neuron and identify the parts of a neuron (i) where information is acquired, (ii) through which information travels as an electrical impulse (iii) where this impulse must be converted into a chemical signal for onward transmission (b) Which part of the human brain is: (i) the main thinking part of the brain? (ii) responsible for maintaining the posture and balance of the body? iii) fluid which protect brain tissue Or What happens when (a) accidently, Planaria gets cut into many pieces- (b) Bryophyllum leaf falls on the wet soil (c) on maturation sporangia of Rhizopus bursts?	3

30	Give reasons for the following: (i) Element carbon forms compounds mainly by covalent bonding. (ii) Diamond has high melting point. (iii) Graphite is a good conductor of electricity.	3
31	Name the main ore of the metal which is used in thermometer? Explain, how it is obtained from this ore? Also write the reaction involved in the extraction.	3
32	A 14-year-old student is not able to see clearly the questions written on the blackboard placed at a distance of 5m from him. a) Name the defect of vision he is suffering from. b) With the help of labelled ray diagrams show how this defect can be corrected. Name the type of lens used to correct this defect. Or Comment on the following a) Universe appears black to astronauts b) Danger signal is made of red color c) Twinkling of stars in the night	3
33	(a) Overloading causes short circuit . Justify this statement. (b) How would you join three resistors of 9 ohm each, so that the equivalent resistance of the combination is maximum (ii) minimum Or Draw ray diagram for the image formed by mirror in following case a) a rear-view mirror b) Dentist mirror.	3
SECTION-D (Question No.34 to 36 are long answer questions)		

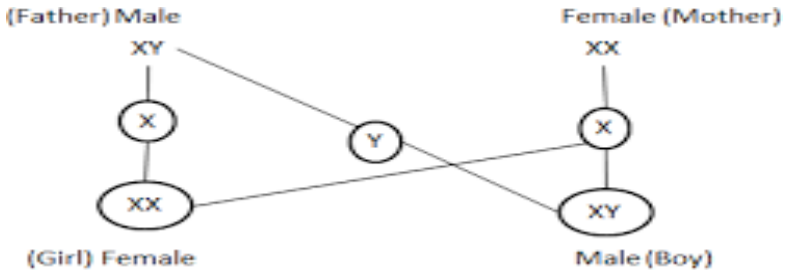
34	The formula of 4 organic compounds is given below: A B C D C_2H_4 CH_3COOH C_2H_5OH C_2H_6 (i) Which one of these compounds A, B, C or D is a saturated hydrocarbon? (ii) Identify the compound which is present in the vinegar, and draw its structural formula. (iii) Which of the above compounds when heated at 443K in the presence of concentrated H_2SO_4 forms ethene as the major product? What is the role played by concentrated H_2SO_4 in this reaction? Also write the chemical equation involved. (iv) Give a chemical equation when B and C react with each other in presence of concentrated H_2SO_4. Name the major product formed and mention one of its important use. OR (a) Carry out the following conversions giving complete conditions for the reaction to take place in each case: (i) Ethanoic acid from Ethanol (ii) Ethane from Ethene (iii) Ester from Ethanoic acid and ethanol (iv) (b) Detergents are preferred over soaps in hard water. Why? (Give two reasons)	5
35	a) Draw a neat, labelled diagram of a pistil showing pollen tube growth and its entry into the ovule. b) State the post fertilization changes take placed in the flower. c) which part of the germinated seed develops into future shoot and root? **OR** a) Write one main difference between asexual and sexual mode of reproduction. b) Which species is likely to have comparatively better chances of survival – the one reproducing asexually or the one reproducing sexually? Give reason to justify your answer. c) state the difference between fission and fragmentation.	5

36	An object is placed at a distance of 30 cm from a concave lens of focal length 30 cm. a) Use lens formula to determine the distance of the image from the lens. b) List two characteristics of the image in this case. c) Draw a labelled diagram to justify your answer of part(b). d) Magnification of the image is -1. Comment. **OR** Analyse the following observation table showing variation of image-distance(v) with object-distance(u) in case of a convex lens and answer the questions. s.no. | u (cm) | v (cm) 1 | -100 | +25 2 | -60 | +30 3 | -40 | +40 4 | -30 | +60 5 | -25 | +100 6 | -15 | +120 a) What is the focal length of the convex lens? Give reason. b) Write the serial no. of the observation which is not correct. Give reason. c) Draw a ray diagram for the observation at s.no. 3. Also find the approximate value of magnification for same s.no.	5

SECTION-E

Question No.37 to 39 are case based/data-based questions with 2 to 3 short sub parts. Internal choice is provided in one of the subparts.

37	Rani and Preeti observed that shoots of a plant growing in shade bend towards the sunlight. Whereas, leaves of 'Touch me not' plant fold and droop soon after touching. They were curious to know how these movements occur in plants. (a) Which hormone causes the bending of shoots in the plants? (b) Name the type of movement in the leaves of 'Touch me not' plant. (c) Compare the movement of growth of the pollen tube towards ovule with the movement of roots towards water. **OR** Explain geotropism?	4

38	All human chromosomes are not paired. Most human chromosomes have a maternal and paternal copy, and we have 22 such pairs. But one pair called sex chromosomes, is odd and not always being a perfect pair.  Woman have a perfect pair of sex chromosomes. But men have a mismatched pair in which one is normal sized while the other is a short one. (a) In humans, how many chromosomes are present in a zygote and in each gamete? (b) If the male sperm having X chromosome fused with the female egg, identify the sex of the unborn baby? (c) "The sex of a child is a matter of chance and none of the parents are considered to be responsible for it".Justify the statement through flow chart.	4
39	In a simple electric circuit, the current through a conductor depends upon its resistance and the potential difference across its ends. In various electrical appliances, we often use resisters in various combination. In our household, various appliances are connected in parallel. (a) Why all the electrical appliances are connected in parallel in a domestic circuit? (b) Mention the factors on which the resistance of a cylindrical conductor depends. (c) Why does the cord of an electric meter not glow while the heating element does? Calculate the heat produced in 1 minute if an electric iron of resistance 20Ω take a current of 5A.	4

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