CLASS X

Pre - Board Paper

SCIENCE

Kendriya Vidyalaya

SECTION A

1. Write the next higher homologue of the following: 1

   (i) C_3H_6

   (ii) C_5H_8

2. How many groups are there in modern periodic table? 1

3. Answer question numbers 3 (a) – (d) on the basis of your understanding of the following paragraph and the related studied concepts.

   Renewable energy resources sector growth in India has been significant, even for electricity generation from renewable sources. Renewable energy is energy generated from natural sources such as sunlight, wind, rain, tides and geothermal heat, which are renewable (natural replenished). Even for the decentralized systems, the growth for solar home lighting systems, the growth for solar home lighting systems has been 300%, solar lanterns 99% and solar photovoltaic water pumps196%. This is a phenomenal growth in the renewable energy sector mainly for applications that were considered to be supplied only through major electricity utilities. Some large projects have been proposed and a 35000 km^2 area of the Thar Desert has been set aside for solar power projects, sufficient to generate 700 to 2100 gigawatt. Renewable energy systems are also being looked upon as a major application for electrification of 20000 remote and unelectrified villages and hamlets by 2007 and all households in such villages and hamlets by 2012.

   (a) What do you mean by renewable energy resource? 1

   (b) Why do you think that Thar Desert has been set aside for solar power projects? 1

(c) Write the advantages of solar energy over thermal energy? 1

(d) What is the principle behind harnessing solar energy? 1

Question number 4(a)- (d) are basedon two tables given below. Study these tables related tohaemoglobin levels and answer the questions that follow.

TABLE A:

Haemoglobin level chart	
Remarks	Haemoglobin (g/dL)
Doctor's advice needed	9-7
	7-4
Good	10-13
Excellent	14-16

TABLE B :

Haemoglobin levels of patients X and Y		
Checking Time	Haemoglobin (g/Dl)	
	Patient X	Patient Y
Blood Test	4	6

(a) Refer to table B showing the haemoglobin level reports of patients (X and Y). Which disease can be diagnosed from the given data? 1

(b) Name the element which is transported by haemoglobin from lungs to all parts of the body . 1

(c) In human beings haemoglobin has a very high affinity for _____ and is present in _____.

Identify X and Y respectively.

(i) Oxygen; red blood cells

(ii) Carbon dioxide; red blood cells

(iii) Oxygen; white blood cells

(iv) Carbon dioxide; white blood cells 1

(d) The haemoglobin level which is considered excellent is 1

(i) 15 g/dl (ii) 10g/dl

(iii) 7g/dl (iv) 4g/dl 1

5. The phenomenon in which a ray of light striking a surface is sent back into the same medium from where it came is known as :

(i) Scattering of light

(ii) Reflection of light

(iii) Refraction of light

(iv) Dispersion of light

OR

A man standing in front of a special mirror finds his image having a very small face, a fat body and legs of normal size. Then he concluded that the special mirror was a combination of different types of mirrors with its top, middle and bottom parts made of:

(i) Convex, plane and concave mirrors respectively

(ii) Plane, convex and concave mirrors respectively

(iii) Concave, Convex and plane mirrors respectively

(iv) Convex, Concave and plane mirrors respectively 1

6. An ohmic conductor of circular cross section has a resistance R. If it is melted and recast to half of its length with rectangular cross section, its new resistance will be 1

(i) 2R (ii) R

(iii) R/2 (iv) R/4

$R = \frac{\rho l}{a}$

$= \rho \frac{l}{2b}$

7. Resistance is a measure of a material's opposition to : 1

(i) Voltage

(ii) Current

(iii) Electric forces

(iv) Movement of protons

8. Ganga Action Plan was started in _____.

(i) 1975 (ii) 1985

(iii) 1995 (iv) 2005

OR

Which one of the following stakeholders of forest causes the maximum damage to forest?

(i) People who live in or around the forest.

(ii) The forest department of the government.

(iii) The wildlife and native enthusiast.

(iv) The industrialists. 1

9. Consider the following statements related to biodiversity:

(i) Biodiversity refers to the different species of flora and fauna present in an area.

(ii) Biodiversity refers to only the flora of a given area.

(iii) Biodiversity is greater in an area.

(v) Biodiversity refers to the total number of individual of a particular species living in an area.

The statement (s) that correctly describe (s) the concept of biodiversity is/are

(i) A only (ii) C only

(iii) A and C only (iv) A, B and D 1

10. Identify the type of chemical reaction : 1

$$Pb(NO_3)_2 + 2KI \longrightarrow PbI_2 + 2KNO_3$$

(i) Combination reaction

(ii) Displacement reaction

(iii) Double displacement reaction

(iv) Oxidation reaction

11. Identify the basic salts from the following salts : 1

(i) Na_2CO_3 (ii) NH_4Cl

(iii) $NaNO_3$ (iv) KCl

12. State Modern periodic law.

OR

If an element X is placed in group 14, what will be the formula and the nature of bonding of its chloride? 1

For question number 13 and 14, two statements are given: one labelled Assertionand the other labelled Reason (R). Select the correct answer to these questions from the codes (i),(ii),(iii)and (iv) as given below:

(i) Both A and R are true and R is correct explanation of the assertion.

(ii) Both A and R are true but R is not the correct explanation of the assertion .

(iii) A is true but R is false.

(iv) A is false but R is true.

13. **ASSERTION (A):** Carbon forms the largest number of compounds.
REASON: Carbon has the catenation property. 1

14. **ASSERTION (A):**All the interacting organisms in an area together

with the non living constituents of the environment form an ecosystem.

REASON (R):All the constituents of a natural ecosystem interact with each other and maintain a balance in the system. 1

SECTION B

15. (a) Write two observations when Iron (II) Sulphate is heated in a test tube.
    (b) Name the type of reaction.
    (c) Write a balanced chemical equation to represent the above reaction. 3

16. A calcium compound which is a yellowish white powder is used as a disinfectant and also in textile industry.
    (a) Name the compound.
    (b) Which gas is released when the compound is left exposed to air?
    (c) Write a balanced chemical equation for preparation of the above compound.

OR

    (a) List the raw materials needed for the manufacture of Baking Soda.
    (b) Name the acid present in Tamarind.
    (c) Name the acidic oxide which causes fizz to soft drinks. 3

17. Three elements X, Y and Z have atomic number 7, 8 and 9 respectively.
    (a) State their position (group number and period number) both in Modern Periodic Table.
    (b) Arrange these elements in the decreasing order of their atomic radii.

(c) Write the formula of the compound formed when X combines with Z. 3

18. Draw a labelled diagram of an electric motor. Write its principle. What is the function of a split ring in an electric motor?

OR

a) List two different ways to induce current in a coil?

b) Differentiate between overloading and short circuit? 3

19. What is translocation? Why is it essential for plants? Where in plants are the following synthesized?

(i) Sugar

(ii) Auxins 3

20. a) Why did Mendel choose pea plant for his experiment?

b) Differentiate between homologous and analogous organs with one example of each. 3

21. a) What is reflex arc?

b) The hormones of pancreas are antagonistic in nature. Do you agree? Explain. 3

22. A spherical mirror produces an image of magnification of -1 on a screen placed at a distance of 50 cm from the mirror.

(a) Write the type of mirror.

(b) Find the distance of the image from the object.

(c) What is the focal length of the mirror.

(d) Draw the ray diagram to show image formation in this case. 3

23. What is an electric fuse? What is its role in electric circuits? Should it be placed on a neutral wire or on live wire? Justify your answer. 3

24. List two main causes of near sightedness. Show with the help of a ray diagram how this defect can be corrected.

OR

State one main function each of the following: (a) Iris (b) Pupil (c) Cornea 3

SECTION C

25. A. Given below are the steps for extraction of Copper from its ore. Write the reactions involved.

(a) Roasting of Copper (I) Sulphide.

(b) Reduction of Copper (I) Oxide with Copper (I) Sulphide.

(c) Electrolytic Refining

B. Draw a neat and well labelled diagram for Electrolytic refining.

OR

State the reason for the following :

(a) Sodium Hydroxide solution cannot be kept in Aluminium container.

(b) Carbon cannot reduce the oxides of sodium or Magnesium.

(c) Ionic compounds have high melting point and boiling point.

(d) Iron articles are galvanized.

(e) Hydrogen gas is not evolved when most metals react with Nitric acid. 5

26. (a) Write the general formula of Alkane and Alkene.

(b) Describe a chemical test to distinguish between Ethanol and Ethanoic acid.

(c) Write a chemical equation to represent what happens when Hydrogen gas is passed through an unsaturated hydrocarbon in the presence of Nickel as a catalyst. 5

[P.T.O.]

27. A. Draw a neat diagram of Human Excretory System and label the following parts :

(a) Part in which urine is produced.

(b) Part which stores the urine.

(c) Part which connects the above two.

(d) Part from which urine is passed out.

(e) Part which carries pure blood out of the kidney.

B. Name the structural and functional unit of kidney. 5

FOR VISUALLY CHALLENGED

(a) How is oxygen and carbon dioxide transported in Human beings?

(b) How are lungs designed in Human beings to maximize the area of exchange of gases?

28. (a) What is placenta? Describe its structure. State its function in case of pregnant Human female.

(b) Draw the diagram of a flower and label the four whorls. Write names of gametes producing organ in a flower.

OR

(a) Why are budding, fragmentation and regeneration all considered as asexual types of reproduction with neat diagram, explain the process of regeneration in Planaria.

(b) Differentiate between Binary fission and multiple fission. 5

FOR VISUALLY CHALLENGED

a) What changes are observed in the uterus if fertilization does not occur?

b) Differentiate between binary fission and budding?

29. (a) Define Ohm's law.

(b) On what conditions do the resistance of a conductor depends.

(c) A current of 5A is flowing through a resistor of 15 ohm. Calculate the potential difference between the ends of the resistor. 5

30. State the reasons for the following:

(a) A rainbow is seen in the sky only after rain fall.

(b) Stars twinkle but planets do not twinkle.

(c) During Sunrise and Sunset, sky appears red but during noon it appears white.

(d) Sky appears black instead of blue to the Astronaut.

(e) Sun is visible 2 min before Sunrise and 2 min after Sunset.

OR

a) What is dispersion of light?

b) What is reason for dispersion of light?

c) Draw a ray diagram showing the phenomenon of dispersion of white light through a glass prism.

d) What will be the change in the size of image when object is moved towards the convex lens? 5

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