Nitansh Anand
X-D

THE INDIAN SCHOOL
HALF YEARLY EXAMINATION (2017-18)
SCIENCE - SET A
CLASS X

TIME: 3 hr **M.M: 80**

GENERAL INSTRUCTIONS:

1. *Question numbers 1 to 2 are one mark questions. These are to be answered in one word or in one sentence.*
2. *Question numbers 3 to 10 are two mark questions. These are to be answered in about 30 words each.*
3. *Question numbers 11 to 19 are three mark questions. These are to be answered in about 50 words each.*
4. *Question numbers 20 to 26 are five mark questions. These are to be answered in about 70 words each.*

Q1 Tooth enamel is the hardest substance in our body. Name the compound of which it is made up . At what pH of the mouth it gets corroded? 1

Q2 Why are plastic bags non-biodegradable? 1

Q3 Complete and balance the following chemical equations: 2

a) $MnO_2 + HCl \rightarrow$

b) $Fe + H_2O \rightarrow$

Q4 a) What will be the action of moistened NH_3 gas and carbonated soft drink on litmus paper? 2

b) An aqueous solution of SO_2 when allowed to react with pH paper, turns pink. Why? What will be the change in colour of the pH paper, if the solution is diluted?

Q5 Shruti had a silver coin which turned black. She kept the coin in a bowl lined with aluminum foil. Then she filled the bowl with water and boiled it. After sometime, she found that the coin has become new. Its blackness disappeared. Explain the reason for this observation. Support your answer with a balanced chemical equation. 2

Q6 What will happen if mucus is not secreted by the gastric glands? 2

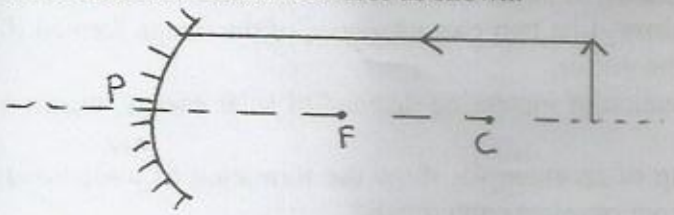
Q7 Define 'nerve impulse'. Which structure in a neuron helps to conduct a nerve impulse 2

a) towards the cell body?

b) away from the cell body?

Q8 Which type of arrangement is used in domestic wiring and why? 2

Q9 A ray of light is incident on a concave mirror as shown. 2



Complete the path of this ray after reflection from the mirror. Mark the angle of incidence and angle of reflection on it.

Q10 With reference to greenhouse gases how can we show that constructing a dam is advantageous or disadvantageous. 2

Q11 a) Name the oxidizing agent and the reducing agent in the given reaction: 3

$$Si + 2Cl_2 \rightarrow SiCl_4$$

b) Identify the type of the following reactions. Also write a balanced chemical equation for each.

i. The reaction mixture becomes warm.

ii. An insoluble substance is formed.

Q12 With the help of an example, explain what are amphoteric oxides. Support your answer with suitable balanced chemical equations. 3

Q13 Give reasons: 3

a) A tarnished copper vessel regains its shine when rubbed with lemon.

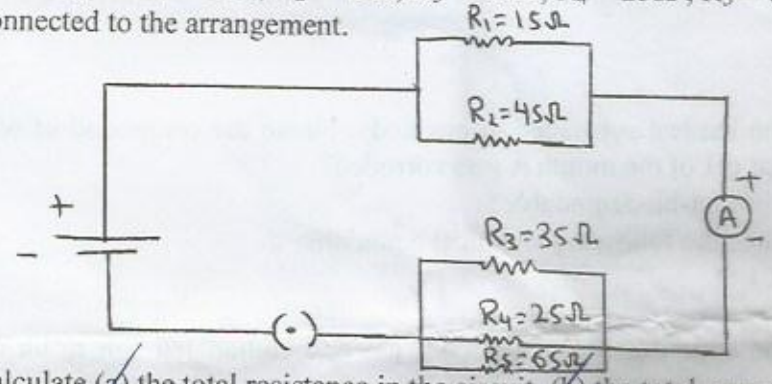
b) The crystals of washing soda change to white on exposure to air.

c) An aqueous solution of potassium sulphate is neutral but an aqueous solution of potassium carbonate is basic.

Q14 Explain the process of nutrition in amoeba. 3

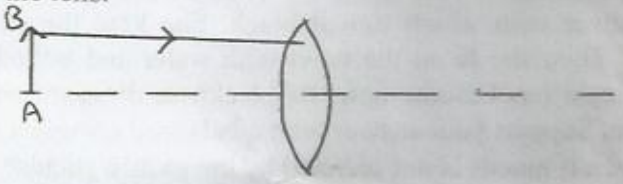
Q15 Differentiate between artery, vein and capillary. 3

Q16 In the figure $R_1 = 15\Omega$, $R_2 = 45\Omega$, $R_3 = 35\Omega$, $R_4 = 25\Omega$, $R_5 = 65\Omega$ and a 12V battery is connected to the arrangement. 3



Calculate (a) the total resistance in the circuit. (b) the total current flowing in the circuit.

Q17 A ray of light is incident on a convex lens as shown. Complete the path of this ray after refraction through the lens. 3



Mark the angle of incidence and the angle of refraction on it. Also mention the size of the image and its nature.

Q18 The image formed by a spherical mirror is real, inverted and is of magnification -2. If the image is at a distance of 30cm from the mirror, where is the object placed? Find the focal length of the mirror. List two characteristics of the image formed if the object is moved 10cm towards the mirror. 3

Q19 With the explanation of increasing demand of solar energy, mention three advantages of a solar cell. 3

Q20 a) With the help of an example, show the formation of ionic bond in $MgCl_2$. How are they different from covalent compounds? 3+1+1

b) There are three unknown metals-A, B and C. C displaces B from its oxide while with oxide of A, there is no reaction. Give the reactivity order of A, B and C.

c) Give one use of thermit reaction giving a balanced chemical equation.

Q21 a) A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product of chlor-alkali process. Identify B. Write a balanced chemical equation for its preparation. What type of reaction occurs when B is treated with an acidic oxide? Write the chemical equation for the reaction involved. 3+2

b) What happens when:

i. Electricity is passed through brine?

ii. Gypsum is heated above 373K?

Write balanced chemical equation.

Q22 a) Two ores A and B were taken. On heating ore A gives CO_2 whereas, ore B gives SO_2. What steps will you take to convert them into metals? Name the processes and give equations for all the processes involved. 4+1

b) Corrosion of some metals is an advantage. Justify with the help of an example.

Q23 a) What are cranial and spinal nerves? Describe a spinal nerve. 3+2

b) Draw a diagram of the human brain and label the following parts:

(i) Cerebrum (ii) Meninges (iii) Medulla oblongata (iv) Cerebellum

Q24 Describe the process of aerobic respiration and anaerobic respiration. 5

Q25 a) Two wires A and B have equal lengths and equal resistance, which one is thicker? The resistivity of A is more than the resistivity of B. 2+3

b) Derive an expression for equivalent resistance of a parallel combination of resistances.

Q26 a) Name the major fuel component of bio gas. What are its other combustible components? 2+3

b) Draw a simple labeled diagram of a fixed dome type bio gas plant. What is the use of the residual slurry and why?