

SAMPLE PAPER September 2014 (SA-I)-04

Subject- Science

Time: - 3Hrs.

Class -X

Maximum Marks 90

SECTION-A

- Q1.** Name the substance present in the stinging hairs of nettle leaves. 1
- Q2.** Give one example of a plant part which is positively hydrotropic as well as positively geotropic. 1
- Q3.** Why are copper wires used as connecting wires? 1
- Q4.** Royal water is prepared by mixing two acids 'A' and 'B'. Identify 'A' and 'B'. What is the ratio in which these two acids are mixed? 2
- Q5.** Why is there so much emphasis on changing over from petrol/diesel driven automobiles to CNG-driven vehicles? 2
- Q6.** Cinnabar is an ore of metal X. It exists in the lower order of the reactivity series. Write down the reaction involved in it for the extraction of X. 2
- Q7.** Can any source of energy be pollution free? Why or Why not? 2
- *Q8.** A solution of a substance 'X' is used for white washing.
a) Name the substance 'X' and write its formula.
b) Write the reaction of the substance 'X' with water. (2+1=3)
- Q9.** A reddish brown metal 'X' when heated in the presence of oxygen forms a black compound 'Y' which is basic in nature. When heated with hydrogen gas gives back 'X'. Identify 'X' and 'Y'. Write down the reactions involved. 3
- Q10.** A student took a pale green substance 'A' in a test tube and heated it over the flame of a burner. A brown colored residue 'B' was formed along with evolution of two gases with burning smell of sulphur. Identify 'A' and 'B'. Write the chemical reaction involved. 3
- *Q11.** A substance 'X' is used in the kitchen for making tasty crispy pakoras and is also an ingredient of antacid. Name the substance 'X'
(i) How does 'X' help to make cakes and bread soft and spongy?

(ii) Is the pH value of solution 'X' lesser than or greater than 7.0? (1+1+1=3)

Q12. Write the functions of the following in the digestive process:

(i) Bile.

(ii) Bicarbonates secreted by the duodenal wall.

(iii) Pancreatic amylase. (1+1+1=3)

Q13. How does the plant shoot bend, when the plant is placed in a room having only one open window? Which type of tropic movement is this? 3

Q14. On touching a hot plate, you suddenly withdraw your hand.

a) Which category of neurons became active first,

b) and which one next?

c) What name is given to the microscopic gap between two adjacent neurons?

(1+1+1=3)

Q15. A wire of length L and resistance R is stretched so that its length is doubled. How will its

(a) Resistance change (b) Resistivity change? (2+1=3)

Q16. A household uses the following electric appliances:

(i) Refrigerator of rating 400 W for ten hours each day.

(ii) Two electric fans of rating 80 W each for twelve hours each day.

(iii) Six electric tubes of rating 18 W each for 6 hours each day.

Calculate the electricity bill of the household for the month of June if the cost per unit of electric energy is Rs. 3.00. 3

Q17. H_2 has been considered as a rocket fuel. Would you consider it as a cleaner fuel than CNG?

Why or Why not? 3

Q18. Why is the earth pin thicker and longer than the live and the neutral pins? 3

Q19. A coil of insulated copper wire is connected to a galvanometer. What would happen if a bar magnet is

a) Pushed into the coil?

b) Withdrawn from inside the coil?

c) Held stationary inside the coil?

(1+1+1=3)

Q20. Describe with the help of an activity the factors on which the Resistance of a conductor depends. Also write the appropriate formula for it. (4+1=5)

OR

Define and Describe with the help of an activity the Ohm's law. Also draw the appropriate graph. (4+1=5)

Q21. a) "Two magnetic lines of force never intersect each other". Comment.

b) Draw magnetic field lines around a current carrying circular coil. Define Right hand thumb rule. (2+3=5)

OR

a) List the properties of magnetic lines of force.

b) Draw magnetic field lines through and around a current carrying solenoid coil. What is its use? (2+3=5)

Q22. a) Veins and arteries carry blood. Which of these carry blood

i) Away from the heart?

ii) Back to the heart?

b) Draw a well labeled diagram of human heart.

(2+3=5)

OR

a) **Why are glomeruli considered as dialysis bags?**

b) Draw a well labeled diagram of a nephron.

(2+3=5)

Q23. a) Why is sodium kept immersed in kerosene oil?

b) Write equations for the reactions of

i) Iron with steam.

ii) Calcium and potassium with water.

(2+3=5)

OR

a) Show the formation of MgO by the transfer of electrons.

b) Why do ionic compounds have high melting points?

(2+3=5)

Q24. Compounds such as alcohols and glucose also contain hydrogen but are not categorized as acids. Describe an Activity to prove it. (5)

OR

Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11, 7 and 9, respectively. Which solution is

a) neutral

b) Strongly alkaline?

c) Strongly acidic?

d) Weakly acidic?

e) Weakly alkaline?

Arrange the pH in increasing order of hydrogen- ion concentration. (5)

Section B

Q25) The pH of a solution is 4. It is:

- i) Basic.
- ii) Acidic.
- iii) Neutral.
- iv) Salty.

Q26) Which of the following will turn red litmus to blue litmus?

- a) Sulphuric acid
- b) lemon juice
- c) sodium hydroxide
- d) hydrochloric acid.

Q27) The gas produced on adding sodium carbonate in acids :

- a) hydrogen
- b) oxygen
- c) carbondioxide
- d) carbonmonoxide

Q28) On adding HCl to Zn metal, the gas produced is:

- a) hydrogen
- b) oxygen
- c) chlorine
- d) carbondioxide

Q29) Resistance is less when resistors are connected in :

- a) Series
- b) parallel
- c) either series or parallel
- d) both series or parallel

Q30) in a circuit ammeter is always connected in :

- a) Series
- b) parallel
- c) either series or parallel
- d) both series or parallel

Q31) The relation between V-I in a conductor is given by:

- a) Ampere.
- b) Ohm.
- c) Coulomb.
- d) Fleming.

Q32) On mixing the aqueous solutions of sodium sulphate and barium chloride the color of the precipitate formed is:

- a) Black
- b) Green.
- c) Brown
- d) White.

Q33) The color of metal deposited when iron nails are dipped in aqueous solution of copper sulphate is :

- a) Reddish brown. b) silvery white.
b) Grey. d) Green.

Q34) Key is plugged in the circuit only when readings have to be measured. This is done to stop:

- a) Extra temperature . b) Burning of circuit.
c) Extra energy loss. d) All the above.

Q35) Ohms law mathematically is .

- a) $V=I/R$ b) $V=R/I$ c) $V=IR$ d) $R=VI$

Q36) If four 2 ohm resistors are connected in series then the effective resistance of the combination is:

- i) 2 ohm.
ii) 8 ohm.
iii) 0.5 ohm.
iv) 4 ohm.

Q37) In the experiment to show that carbon dioxide is produced during respiration the role of KOH is to absorb:

- a) Carbon dioxide.
b) Nitrogen.
c) Water vapors.
d) Oxygen.

Q38) In the experiment to show that carbon dioxide is produced during respiration the seeds taken in the flask are:

- a) Germinating. b) Dry.
c) Non germinating. d) Brown.

Q39) In an experiment to show that light is necessary for photosynthesis the plant is kept in dark so that .

- a) Chlorophyll is removed from leaves. b) Leaves are destarched.
c) Both (a) and (b). d) None of the above.

Q40) The shape of guard cells is:

- a) Circular. b) Rectangular. c) Dumb-bell. d) Oval .

Q41) Which of the following is present in guard cells:

- a) Nucleus.
b) Chloroplast.
c) Both chloroplast and nucleus.
d) None of the above.

Q42) In an experiment to show that light is necessary for photosynthesis which of the following part of the leaf will become blue-black on adding iodine solution:

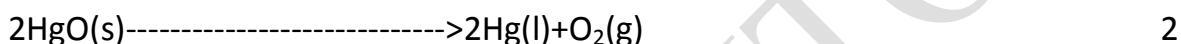
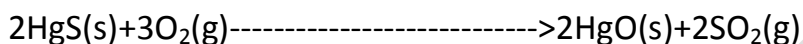
- a) Uncovered part of leaf. b) Covered part of leaf.
c) Both (a) and (b). d) None of the above.

MODEL ANSWERS SAMPLE PAPER September 2014 (SA-I)-04

Section-A

1. Methanoic acid 1
2. Roots 1
3. The Electrical Resistivity of copper is low 1
4. $3\text{HCl} : \text{HNO}_3$ 2
5. CNG on burning produces only carbon dioxide and water. It does not produce smoke. It does not leave unburned hydro-carbons, lead particulates etc. 2

6. X is mercury and the ore is HgS.



7. No source of energy can be called pollution free, because the use of any source of energy disturbs the environment in one way or the other. The actual source of energy may be pollution free, but the assembly of the device might have caused some damage to the environment. So, in absolute sense no source of energy can be called pollution free. 2

8. (a) Calcium Oxide CaO 3

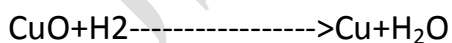


Quick lime (slaked lime)

9. Oxygen reacts with copper to form copper oxide which has black colour 3



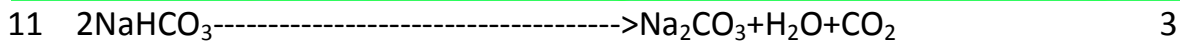
Air Black



The copper oxide is losing oxygen and is being reduced. The hydrogen is gaining oxygen and it being oxidized .

10. $2\text{FeSO}_4(s) \longrightarrow \text{Fe}_2\text{O}_3(s) + \text{SO}_2(g) + \text{SO}_3(g)$ 3

A (green) B(brown)



X(sodium hydrogen carbonate) (Sodium Carbonate)

- (i) When CO_2 gas escapes as bubbles it leaves behind pores which make the cake or bread soft and spongy.
- (ii) It is salt of strong base so the pH of the solution will be more than 7.0.

12. (i) Bile- it is secreted by the gall bladder and it emulsifies the fats into the smaller droplets for their easy digestion.

(ii) It provides alkaline medium in the duodenum which is needed for the action of pancreatic enzymes of different food components for their digestion.

(iii) Pancreatic amylase enzymes digests starch and changes it into maltose. 3

13. When a plant is placed in such a room that has only one open window, the shoot of the plant bends towards the direction of light. Plant hormone auxin is formed that diffuses towards the shady side of the shoot and stimulates the cells to live longer on the side of the shoot which is away from light. In this way the shoot bends towards the light. 3

14. On touching a hot plate, first the sensory neurons are activated, which take the information to the brain or spinal cord. Next, the motor neurons become active and bring the impulses from the brain to the muscles. On receiving these impulses the muscles contract and the hand is immediately removed from the hot plate.

Synapse. 3

15. (a) If the original length of the wire is l and its cross-sectional area is A , then $R = \rho l/A$. When length becomes $2l$, cross-sectional area reduces to $A/2$ because volume does not change. The new resistance $= \rho(2l)/(A/2) = 4 \rho l/A = 4R$

(b) Resistivity does not change. 3

16. Electrical energy consumed per day $= 400 \times 10 + 2 \times 80 \times 12 + 6 \times 18 \times 6$
 $= 4000 + 1920 + 648 = 6568 \text{ Wh} = 6.568 \text{ kWh}$

Electrical energy consumed in 30 days $= 6.568 \times 30 = 197 \text{ kWh (units)}$

Electrical Bill $= 197 \times 3 = \text{Rs. } 591.$ 3

17. Hydrogen when burned in presence of oxygen produces water as the only product with release of heat and energy. Water does not cause any damage to environment while CNG

during burning produces CO_2 and H_2O . CO_2 is not a pollutant yet it leads to rise in the temperature (global warming), this rise is called green- house effect and this will affect polar ice and life on the earth is at risk. Thus hydrogen is cleaner fuel than CNG. 3

18 It is thicker so that it does not enter into the live or neutral sockets. It is made longer so that it gets connected to the earth terminal earlier than the live and neutral pins. This ensures the safety of the user. 3

19.(i) Due to change in magnetic flux linked with coils, the galvanometer shows deflection(say towards right).

(ii) Due to the change in magnetic flux linked with coil, the galvanometer shows deflection (say towards left opposite to that in case i)

(iii) As it is stationary no change in magnetic flux linked with coil, so galvanometer shows no deflection. 3

20. Activity 12.3 of NCERT Book 5

$$R = \rho l / A.$$

OR

Activity 12.1 of NCERT Book

Figure 12.3 of NCERT Book 5

21.a) No two field lines are found to cross each other. If they did, it would mean that at the point of intersection , the compass needle would point towards two directions, which is not possible.

b) Figure 13.8 of NCERT Book

correct definition of rule 5

OR

a) Any two properties

(b) Figure 13.10 of NCERT Book 5

22. a) 1.Arteries carry blood away from the heart.

2. Veins carry blood back to the heart 5

(b) Figure 6.10 of NCERT Book

OR

(a) The main function performed by the glomeruli is selective filtration. They filter small molecules containing glucose, salt, urea and liquid serum etc. The large molecules such as proteins remain in blood. Thus, glomeruli of the kidneys function as dialysis bags.

b) Figure 6.14 of NCERT Book

5

23. a) Sodium reacts with oxygen at room temperature

(b) correct equations

5

OR

a) Correct formation by dot representation method.

b) Correct explanation.

5

24. (a) Activity 3.13 of NCERT Book

(i) D

(ii) C

(iii) B

(iv) A

(v) E

Correct increasing order.

Section B

25. ii 26. c 27. c 28. a 29. b 30. a

31. b 32. d 33. a 34. d 35. c 36. ii

37. a 38. a 39. b 40. c 41. c 42. a