CBSE Board
Class X Science
Board Paper – 2010

Time: 2½ hrs Total Marks: 60

General Instructions:

1. The question paper comprises of **two Sections**, **A** and **B**. You are to attempt both the Sections.
2. The candidates are advised to attempt all the questions of **Section A** and **Section B** separately.
3. **All** questions are **compulsory**.
4. There is no overall choice. However, internal choice has been provided in some questions. You are to attempt only one option in such questions.
5. Question numbers **1** to **6** in **Section A** and **19** to **21** in **Section B** are very short answer questions. These questions carry **one mark each**.
6. Question numbers **7** to **12** in **Section A** and **22** to **24** in **Section B** are short answer questions and carry **two marks each**.
7. Question numbers **13** to **16** in **Section A** and **25** and **26** in **Section B** are also short answer questions and carry **three marks each**.
8. Question numbers **17** and **18** in **Section A** and **27** in **Section B** are long answer questions and carry **five marks each.**

SECTION-A

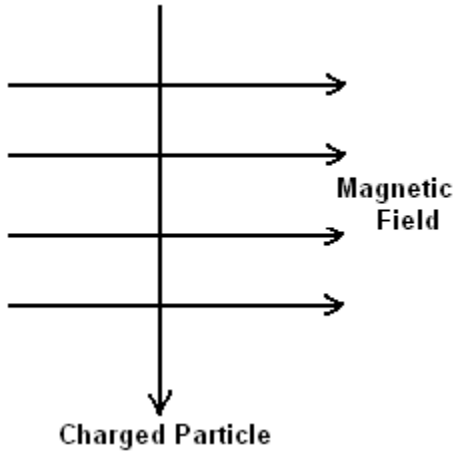
Q1. What change in the colour of iron nails and copper sulphate solution you observe after keeping the iron nails dipped in copper sulphate solution for about 30 minutes.

Q2. State two characteristic features of carbon which when put together give rise to large number of carbon compound.

Q3. Explain why a ray of light passing through the centre of curvature of a concave mirror gets reflected along the same path.

Q4. What is the nature of the image formed by a concave mirror if the magnification produced by the mirror is +3?

Q5. A charged particle enters at right angles into a uniform magnetic field as shown. What should be the nature of charge on the particle if it begins to move in a direction pointing vertically out of the page due to its interaction with the magnetic field?

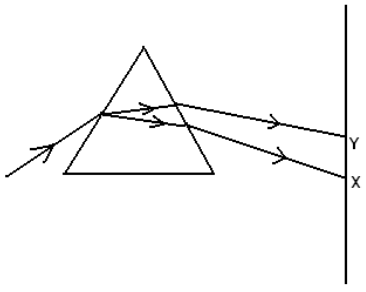


Q6. Name the part of our eyes that helps us to focus near and distant objects in quick succession.

Q7. What happen when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride? State the physical conditions of reactants in which the reaction between them will not take place. Write the balanced chemical equation for the reaction and name the type of reaction.

Q8.What is the main constituent of biogas? How is biogas obtained from biomass? Write any two advantages of using this gas.

Q9. In the figure given below a narrow beam of white light is shown to pass through a triangular glass prism. After passing through the prism it produces a spectrum XY on a screen.



(a) State the colour seen at X and Y.
(b) Why do different colours of white light bend through different angles with respect to the incident beam of light?

Q10. What is a solenoid? Draw the pattern of magnetic field lines of a solenoid through which a steady current flows. What does the pattern of field lines inside the solenoid indicate?

Q11. A coil of insulated wire is connected to a galvanometer. What would be seen if a bar magnet with its north pole towards one face of the coil is

(i) moved quickly towards it,
(ii) moved quickly away from the coil and
(iii) placed near its one face?

Name the phenomena involved.

Q12. Mention any four limitations in harnessing wind energy on a large scale.

Q13. At what distance should an object be placed from a convex lens of focal length 18 cm to obtain an image at 24 cm from it on the other side. What Will be magnification produced in this case?

Q14. No chemical reaction takes place when granules of a solid, A, are mixed with the powder of another solid, B. However when the mixture is heated, a reaction takes place between its components. One of the products, C, is a metal and settles down in the molten state while the other product, D floats over it. It was observed that the reaction is highly exothermic.

(i) Based on the given information make an assumption about A and B and write a chemical equation for the chemical reaction indicating the conditions of reaction, physical state of reactants and products and thermal status of reaction.
(ii) Mention any two types of reaction under which above chemical reaction can be classified.

Q15. Name the functional group of organic compounds that can be hydrogenated. With the help of suitable example, explain the process of hydrogenation mentioning the conditions of the reaction and any one change in physical property with the formation of the product. Name any one natural source of organic compounds that are hydrogenated.

Q16. Atoms of eight elements A, B, D, E, F, G and H have the same number of electronic shells but different number of electrons in their outermost shell. It was found that elements A and G combine to form an ionic compound. This compound is added in a small amount to almost all vegetable dishes during cooking. Oxides of elements A and B are basic in nature while those of E and F are acidic. The oxide of D is almost neutral. Based on the above information answer the following questions:

(i) To which group or period of the periodic table, do the listed elements belong?
(ii) What would be the nature of compound formed by a combination of elements B and F?
(iii) Which two of these elements could definitely be metals?
(iv) Which one of the eight elements is most likely to be found in gaseous state at room temperature?
(v) If the number of electrons in the outermost shell of element C and G be 3 and 7 respectively, write the formula of the compound formed by the combination of C and G.

Q17. Write the name and symbols of two most reactive metals belonging to group I of the periodic table. Explain by drawing electronic structure how either one of the two metals reacts with a halogen. With which name is the bond formed between these elements known and what is the class of the compound so formed known? State any four physical properties of such compounds.

OR

What is meant by refining of metals? Name the most widely used method of refining impure metals produced by various reduction processes. Describe with the help of a labeled diagram how this method may be used for refining of copper.

Q18. Derive the expression for the heat produced due to a current 'I' flowing for a time interval 't' through a resistor 'R' having a potential difference 'V' across its ends. With which name is the relation known? How much heat will an instrument of 12W produce in one minute if it is connected to a battery of 12V?

OR

Explain with the help of a labeled circuit diagram how you will find the resistance of a combination of three resistors, of resistance R_1, R_2 and R_3 joined in parallel. Also mention how you will connect the ammeter and the voltmeter in the circuit when measuring the current in the circuit and the potential difference across one of the three resistors of the combination.

SECTION-B

Q19. Name the green dot like structures in some cells observed by a student when a leaf peel was viewed under a microscope. What is this green colour due to?

Q20. How is the spinal cord protected in the human body?

Q21. How is the increasing demand for energy adversely affecting our environment?

Q22. What are hormones? Name the hormone secreted by thyroid and state its function?

Q23. With the help of diagrams show the different stages of binary fission in Amoeba.

Q24. Given one example each of characters that are inherited and the ones that are acquired in humans. Mention the difference between the inherited and the acquired characters.

Q25. Write the full form of DNA. Name the part of the cell where it is located. Explain its role in the process of reproduction of the cell.

Q26. Explain the phenomenon of "biological magnification." How does it affect organisms belonging to different tropic levels particularly the tertiary consumers?

Q27. Explain the process of digestion of food in mouth, stomach and small intestine in human body.

OR

(a) List the three events that occur during the process of photosynthesis. Explain the role of stomata in this process.
(b) Describe an experiment to show that "sunlight is essential for photosynthesis."