

SCIENCE AND TECHNOLOGY (THEORY)

Class: X

Time allowed: 2 ½ hours

max marks: 60

General Instructions:

1. The question paper comprises 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 separately and Section b separately. Do not mix Section A with Section B.**
3. All questions are compulsory.
4. Qn nos 1 to 4 in section A and Qn nos 17 to 18 in Section B carry 1 mark each. These are to be answered in one word or one sentence.
5. Qn nos 5 to 8 in section A and Qn nos 19 to 20 in Section B carry 2 mark each. These are to be answered in 30-40 words each
6. Qn nos 9 to 14 in section A and Qn nos 21 to 23 in Section B carry 3 mark each. These are to be answered in 40-50 words.
7. Qn nos 18 to 20 in section A and Qn nos 24 in Section B carry 5 marks each. These are to be answered in 70 words each.
8. Support your answers with equations and diagrams wherever necessary.

1. A solution contains 0.05 moles of hydrochloric acid in 2.5 litres of solution. Calculate the molarity.
2. Write the formula of the monomer used in the preparation of synthetic rubber.
3. A 20 cm long straight wire stretched horizontally carries a current of 10A in a magnetic field whose strength is 0.1T. Calculate the force acting on this charged particle.
4. Draw the shape of Big Bear constellation showing the position of stars.
5. How is slaked lime obtained from lime?
6. A beaker contains 500 gms of water at 20°C. When 2.5 gm of charcoal is burnt below this beaker, the final temp of water becomes 50°C. If the specific heat of water be 4.2 J/g⁰, calculate the calorific value of charcoal.
7. What is meant by projectile used in nuclear reactions? Which projectile is best and why?
8. SO₂ has bleaching action. Explain. Why is it temporary?
9. A compound X reacts with water to produce two products Y and Z. A person measures the concentration of compound X at different time intervals. The data obtained is given below:

Time	Concentration of X
0 min	0.0100 mol/L
20 min	0.0097 mol/L
40 min	0.0094 mol/L
80 min	0.0088 mol/L

- Calculate the rate of reaction of compound X with water between
- 0 and 40 min
 - between 20 and 80 mins.
 - between 40 and 80 mins
- A converging mirror forms a real image of height 4 cm of an object of height 1 cm placed 20 cm away from the mirror. Calculate the image distance and focal length of the mirror.
 - What is mirage? Explain how it occurs.
 - Give the law of combination of resistances in parallel. When a current of 0.5A was passed through a copper voltameter for 20 minutes, 0.198 g of copper was deposited. Calculate the electrochemical equivalent of copper.
 - Explain the process of manufacturing Ammonia in detail with the aid of equations.
 - Describe Tollen's test. Write the equations of the reactions involved in this test.
 - Define the term alloy and amalgam. Name the alloy used for welding electric wires together. What are its constituents? Name the constituents of Brass, Bronze and Stainless steel. State one property in each of these alloys, which is different from its main constituent.
 - Describe the process of manufacture of ordinary glass. Draw a labeled diagram of furnace used. How is safety glass prepared?

SECTION B.

- Write the full form of GMO
- Write one function each of Vasopressin and Oxytocin hormone
- Write a neat labeled diagram of nephron.
- Explain the process of digestion in grasshopper.
- Explain the sex determination mechanism in human beings.
- Describe three methods of controlling air pollution caused by gaseous pollutants.
- Describe the three methods used for birth control.
- With the help of a neat labeled diagram, explain the process of digestion in human beings.