

SCIENCE & TECHNOLOGY  
2006-07  
CLASS X (THEORY)

TIME: 2 ½ Hrs.

Max.Marks:60  
DATE: 16-12-2006

General Instruction:

The question paper comprises of two sections A and B. You are to attempt both the sections. The candidates are advised to attempt all the questions of Section A separately and section B separately.

All questions are compulsory.

There is no overall choice. However, internal choice has been provided in two questions of five marks category in Section A and one question of 2 marks category and one question of 3 marks category in section B. You are to attempt only option in such questions.

Marks allocated to each question are indicated against it.

Questions 1 to 4 in Section A and 17,18 in Section B are very short answer questions. These are to be answered in one word or one sentence only.

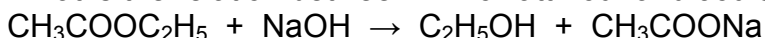
Questions 5 to 8 in Section A and 19, 20 in Section B are short answer questions. These are to be answered in about 30-40 words each.

Questions 9 to 14 in Section A and 21,23 in Section B are also short answer questions. These are to be answered in about 40-50 words each.

9. Questions 15,16 in Section A and 24 in Section B are long answer questions. These are to be answered in about 70 words each.

SECTION A

What is the relation between 1 kilowatt hour and Joules? (1)



What is this reaction called as? Identify the functional group found in  $\text{CH}_3\text{COCH}_3$ ?

(1)

The current through resistor is made three times its initial value.

How many times do the rate of heat produced in the resistor increase.

(1)

Name two effects produced by atmospheric refractions. (1)

What is static equilibrium? What are the factors affecting the rate of a reaction? Write the equilibrium constant for the following reaction:



What is thermite reaction? Write chemical equation also. Why does a goldsmith find it unsuitable to make ornaments of 24 carat

gold? Name two elements, addition of any one of which to pure gold makes it suitable for ornament making. (2)

A copper wire has a diameter 0.5 mm and resistivity of  $1.6 \times 10^{-6}$  ohm. How much of this wire would be required to make a 10-ohm coil?

OR

Calculate the resistance of 1 meter that has a cross-sectional area of about  $2 \times 10^{-2} \text{ cm}^2$ . Compare the value of this resistance with that of a flash light bulb, which has, power rating of 1 W and operates at 3 V. What does this comparison tell? (2)

What are the three layers of earth? How do we study the structure and composition of the inner parts of the earth? (2)

Write the preparation of Vinegar and formaldehyde with chemical equation. What is produced when sodium ethanoate reacts with slaked lime? Write chemical equation and what is this reaction called as? Write a chemical equation to show the acidic nature of carboxylic acid. (3)

Draw a labelled diagram for Frasch process used for extraction of Sulphur. Explain the changes which occur in Sulphur when it is heated. (3)

[1] Light enters from air to glass plate having refractive index 1.5. What is the speed of light in the glass? The speed of light in vacuum is  $3 \times 10^8$  m/sec. (1)

[2] Name the satellites, which are produced, for Remote sensing, Geostationary, meteorological and Astronomical observations by ISRO. (1)

[3] Differentiate between looming and mirage {two points} (1)

Describe the nuclear chain reaction with diagram and compare it with Critical Nuclear reaction [2 points] (3)

OR

Find the relationship between the potential difference and current as ohm has predicted it in his experiment with diagram.

[1] Washing soda on heating does not decompose. What changes can you find then? Write chemical equation also. What is the effect of litmus solution on the above mentioned compound? (1)

[2] Explain the manufacture of glass. Which compound is added to obtain brown glass and blue glass? Write any two types of steel and write one use of each. (2)

a. State Fleming Right hand rule? ( $\frac{1}{2}$ )

b. A coil of copper wire is connected to a galvanometer. What would happen if a bar magnet is:-

[1] bar magnet is pushed into the coil with its north pole entering first?

[2] bar magnet is pulled out quickly? (1  $\frac{1}{2}$ )

[3] bar magnet is held stationary inside the coil.

- c. What are the factors on which the magnetic field by a solenoid depends? (1)

A yellow non-metal brittle in nature, can be mined and is soluble in carbon disulphide.

Identify this non-metal.

Name its two allotropes

How many atoms are present in its catenated molecule?

Write chemical equations to represent the reaction of this element with

Concentrated Sulphuric acid

Concentrated Nitric acid.

OR

A metal does not corrode when left exposed to air. It also occurs in nature in its oxide form and is used in thermit reaction.

- Identify the metal
- Describe the method used to enrich chief ore of this metal.
- Give two balanced chemical reactions in which this metal acts as a reducing agent. (5)

Describe the effective resistance, if three resistances R1, R2 and R3 are connected in series and parallel.

OR

Explain the following:

Why is tungsten used almost exclusively for filament of incandescent lamps?

Why are the conductors of heating devices such as toasters and electric irons made of an alloy rather than a pure metal?

Why an ammeter likely to be burnt if you connect it in parallel?

Why the series arrangement is not found satisfactory for house lights?

Why is the resistance of a given wire inversely proportional to its cross-sectional. (5)

## SECTION B

What is byssinosis? Write two methods of controlling gaseous pollutants.

(1)

UV rays are said to be harmful to human beings but we drink

water from water filter in which rays are used. Why is drinking this treated water not harmful? (1)

Name four blood groups in human beings. Describe the clotting of blood. (2)

Distinguish between homologous and analogous organs. To which of these categories the spine of cactus and thorn of Bougainvillea belongs and why?

OR

Explain the various types of chromosomes. (2)

Describe the mechanism of Photosynthesis. Why rate of photosynthesis is very low in late evening? (3)

- What are the four lobes found in cerebrum? Write the function of each lobe. Write the three parts of hind brain with its function. (3)
- What is Parthenogenesis? What is Stock and Scion? Draw a labelled diagram of reproductive system of human female. (3)
- How population is checked by surgical method in humans? (2)
- a. Describe the structure of DNA. (2)
- Explain the process of excretion and osmoregulation in humans. (2)
- What is translocation and acent of sap? (1)