

**SCIENCE AND TECHNOLOGY
CLASS X (THEORY)**

TIME: $2\frac{1}{2}$ Hrs.

MAX. MARKS: 60

GENERAL INSTRUCTIONS:

1. *The question paper consists 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 separately and Section –B separately.*
3. *All questions are compulsory.*
4. *There is no overall choice. However, internal choice has been provided in two questions of five marks category and one question of 3 marks category in Section A and one question of 2 marks category and one question of three marks category in Section-B.*
5. *Marks allocated to each question are indicated against it.*
6. *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. One mark questions*
7. *Questions 5 to 8 in Section A and 19, 20 in Section-B are short answer questions. These are to be answered in 30-40 words each. Two mark questions*
8. *Questions 9 to 14 in Section A and 21 to 23 in Section-B are also short answer questions. These are to be answered in 40-50 words each. Three mark questions*
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. Five mark questions*

SECTION - A

1. Why non metals are mostly poor conductors of electricity? Is there any exception to it?
2. In the manufacture of ammonia by haber process in what ratio the nitrogen and hydrogen are mixed?
3. What is the direction of magnetic field lines?
4. Why we use parallel combination in our homes?
5. How permanent magnets are made?
6. a) Name the chief ore of aluminum. Write its chemical formula also.

- b) Why is cryolite added to alumina during extraction of aluminum?
7. State and explain graphically ohms law?
8. Give two examples of negative catalyst reactions?
9. a) What kind of mirror is used in streetlights and why?
b) Draw a ray diagram for concave lens when the object is placed at its focus?
10. a) Complete the following reaction

$${}^{235}_{92}\text{U} + {}^1_0\text{n} \longrightarrow \text{_____} + \text{_____} + 3{}^1_0\text{n} + \text{Q}$$
b) Calculate the total energy given out by the fusion of 100 kg of U^{235} assuming that 25 % of mass was converted into the energy?
11. a) Find the power of convex lens of focal length 3 m?
b) In a resistance R, a current of 3.5 ampere is passed. What is the amount of Electrical energy dissipated in 1 minute?
12. An organic compound 'A' of molecular formula, $\text{C}_2\text{H}_6\text{O}$ on oxidation gives an acid 'B' with the same number of carbon atoms as in the compound A. Compound A is even used by doctors for sterilization of skin wounds. Identify A and B. Also write the chemical reaction involved in the conversion of A to B.
13. a) Why sodium is kept immersed in kerosene oil?
b) Write the formula of cisplatin?
c) Name the gas which is neither acidic nor basic in nature
14. How bleaching powder is prepared by Bessemer process?
15. How can electricity be generated from water? Discuss various advantages and its disadvantages? Also briefly explain the various constraints in its site selection?
16. a) State law of chemical equilibrium? How it indicates the extent of a chemical reaction?
b) Calculate the equilibrium constant for the reaction,

$$2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$$
Given : The equilibrium constant for the reaction,

$$2\text{SO}_3(\text{g}) \rightleftharpoons 2\text{SO}_2(\text{g}) + \text{O}_2(\text{g})$$
 is 49.

SECTION- B

17. Name the mode of nutrition in amoeba?
18. Name the two kinds of cells of xylem?
19. What is a nerve impulse? what is the role of axon and dendrites
20. name the gland which secrete digestive enzymes and mention its hormones and their functions
21. name and write the function of 3 centers of hind brain
22. Explain Darwin theory of evolution?
23. Explain the mechanism of photosynthesis?
24. What are sources of water pollution? State the harmful effects of water pollution?
How can we control it?