

**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 a mixture of water and alcohol is used instead of water in radiators of vehicles in cold countries?
2. give an example of chemical reactions where energy production is important than products
3. What is equilibrium constant? How their values help us to predict the nature of any reaction? Explain with an example.
4. How we can prepare propanone from cumene? Write balanced equation.
5. Explain the terms:
 - a) Esterification
 - b) Saponification

c) Decarboxylation

6. Explain the magnetic separation process of extracting the metal from an ore?
7. a) Give an example of negative catalyst?
b) What are molasses?
c) What is batch and cullet?
8. a) What do you mean by “bleaching action”?
b) How the properties of the iron varies if we increase the quantity of carbon init?
c) How baking soda makes the cakes fluffy?
d) What happens to the catalyst after the chemical reaction is over?
e) What is the use of borax in glass industry?
9. Why can not nuclear fusion be carried out in nuclear reactor?
10. Why there are many thin wires wrapped and then made a thick wire used in the household and industry wiring?
11. What are the characteristics of a material used in the fuse wire?
12. How is the pole star located in the sky? Why is the pole star so special? How does it give direction more accurately?
13. An electric kettle rated 1000W, 220V is used to bring water at 20 degrees to its boiling point. If the kettle is switched on for 10 minutes. Calculate:
 - a) The resistance of the element of kettle
 - b) Current flowing through the element
 - c) Mass of water in the kettle.
14. Electricity generated from windmill/oceans is another form of solar energy. Explain with suitable reasoning.
15. Why pure iron is not used in making permanent magnets. Name materials used for making permanent magnets. Describe how permanent magnets are made electrically? State two examples of electrical appliances which use permanent magnets.
16. a) Explain how we see different colors of an object. Why it is that some people are not able to Distinguish between different colors? The chicken

wakes up with the sunrise and sleeps with the sunset. How does it manage?

b) Distinguish between Delayed, prompt and spontaneous fission of nuclei.

c) What is the cause of release of usually high energy in nuclear fission reaction?

d) Name any two artificial satellite launched by India.

SECTION - B

17. Why the White Blood Cells are called 'Soldiers of the Body'?

18. Name the structural and functional unit of the excretory system.

19. Give reasons why cuscuta does not possess leaves

20. a runner gets exhausted and falls down after he reaches the finishing line.

His muscles develop a lot of pain. Explain the bio-chemical changes occurring in his muscles during the period.

21. a) State the Biogenetic law? What does it explain?

b) Who wrote the book 'Philosophique Zoologique'? Explain his theory of organic

evolution.

22. a) What do you mean by Karyotyping? How is it done? How is the study of karyotypes useful? Give an example. A karyotypes of a female organism shows 20 pairs of Chromosomes. How many chromosomes will you find in the egg and Why?

23. What is green house effect? State its 3 applications? Is it always useful? Comment.

24. Describe the terms in relation to the human reproduction:

1. Fertilization 2. Implantation 3. Placenta 4. Gestation 5. Parturition