

SCIENCE AND TECHNOLOGY (Theory)
Delhi Compartment— 2006

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.
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. Marks allocated to every question are indicated against it.
6. Question numbers 1—4 in Section A and 17— 18 in Section B are very short answer questions and are of 1 mark each. These are to be answered in one word or one sentence each.
7. Question numbers 5—8 in Section A and 19— 20 in Section B are short answer questions and are of 2 marks each. These are to be answered in 30—40 words each.
8. Question numbers 9—14 in Section A and 21—23 in Section B are also short answer questions and are of 3 marks each. These are to be answered in 40—50 words each.
9. Question numbers 15—16 in Section A and 24 in Section B are long answer questions and are of 5 marks each. These are to be answered in 70 words each.

SECTION - A

- Q. 1.** Give an example of an endothermic reaction. **(1)**
- Q. 2.** What kind of lens is used in the spectacles of a person suffering from myopia (near-sightedness)? **(1)**
- Q. 3.** Name a metal which is both ductile as well as malleable. **(1)**
- Q. 4.** There are two electric bulbs,
- i. marked 60 W; 220 V and
 - ii. marked 100 W; 220 V. Which one of the two has a higher resistance? **(1)**
- Q. 5.** What is meant by the term “magnetic field lines”? List two properties of magnetic field lines. **(2)**

Or

With the help of a neat diagram describe how you can generate induced current in a circuit.

- Q. 6.** Write two observations you would make when quick lime is added to water. **(2)**
- Q. 7.** Choose a metal out of the following which reacts with hot water but not with cold water:
Sodium, Magnesium, Iron
Mention the products formed during the reaction. **(2)**
- Q. 8.** Out of the two, equatorial and polar orbits of man-made satellites, which one is suitable for collection of data for weather prediction? Why? **(2)**
- Q. 9.**

- a. What is meant by pH of a solution?
- b. State one difference between a strong electrolyte and a weak electrolyte. Give one example of each. **(3)**

Q. 10. In a household 5 tubelights of 40 W each are used for 5 hours and an electric press of 500 W for 4 hours every day. Calculate the total electrical energy consumed by the tubelights and press in a month of 30 days. **(3)**

Q. 11. What is an alloy? Name the constituents of 22- carat gold. Why is 24-carat gold converted to 22-carat gold? **Or**

Draw a labelled diagram to show the extraction of sulphur by Frasch process.

Q. 12.

- a. Name the device used to convert
 - i. solar energy into heat, and
 - ii. solar energy into electricity.
- b. Explain the principle of working of a wind-mill. **(3)**

Q. 13.

- a. Name the functional group present in propanone (acetone).
- b. What is the product formed when propanone is reduced? Name the reducing agent used...
- c. What happens when propanone is oxidised by alkaline KMnO_4 ? **(3)**

Q. 14. What are Jovian planets? Why are they so called? Write any two special features of Jovian planets. **(3)**

Q. 15.

- a. Name an important ore of iron. Write its formula.
- b. How is this ore concentrated?
- c. Describe with chemical equations, the reactions taking place in the furnace to obtain iron from the concentrated ore. **(5)**

Or

Give reasons for the following;

- a. Metals conduct electricity.
- b. Metals generally do not form compounds with hydrogen.
- c. A piece of zinc placed in blue copper sulphate solution decolourises it.
- d. Alumina is dissolved in molten cryolite for electrolysis to obtain aluminium metal.
- e. Nitrogen gas is used, to preserve food.

Q. 16.

- a. State the relation between object distance, image distance and focal length of a spherical mirror.
- b. Draw a ray diagram to show the image formed by a concave mirror when an object is placed between pole and focus of the mirror.
- c. A concave mirror of focal length 15 cm forms an image of an object kept at a distance of 10 cm from the mirror. Find the position, nature and size of the image formed by it. **(5)**

SECTION B

Q. 17. What is a gene? **(1)**

Q. 18. What is vegetative propagation? **(1)**

Q. 19. Mention two harmful effects of each of the following pollutants that are emitted from motor vehicles:

i. Carbon monoxide

ii. Lead **(2)**

Or

Define eutrophication. State its two harmful effects.

Q. 20. What is sustainable 'development'? Suggest any one method to achieve it. **(2)**

Q. 21. What is pollination? Name its two types. How do they differ from each other? **(3)**

Q. 22. Draw a diagram of human alimentary canal showing duodenum, small intestine, liver and pancreas. **(3)**

Or

State the role of the following in the human respiratory system:

Q. 23. What is blood transfusion? What could be the consequence if proper matching of blood is not done during transfusion? Give the reason of such a consequence. **(3)**

Q. 24.

a. What is a reflex action? Give its two examples. Illustrate the pathway followed by a message from the receptor in a reflex arc.

b. Name the sympathetic and para sympathetic systems of eye. **(5)**