

## SCIENCE—2003 (Outside Delhi)

### SECTION - A

- Q. 1.** Name the process by which energy is produced in a nuclear reactor. **1**
- Q. 2.** Which one of the following groups are (a) most reactive and (b) least reactive metal? Au, Na, Cu, Ca **1**
- Q. 3.** The mass of a star is about 900 times that of our Sun. Explain what would happen to its core after red giant phase. **1**
- Q. 4.** What is the special name of those days when the Sun rises exactly in the east? **1**
- Q. 5.** What is meant by 'persistence of vision'? **1**
- Q. 6.** Name the places of our country where fields of natural gas are found. Why is it called a clean fuel? Give two reasons.  
Or  
How are fossil fuels formed? How these fossil fuels were made? **2**
- Q. 7.** Define the term 'alloy', Write two advantages of making alloys. **2**
- Q. 8.** State the characteristic of satellite used for communication purposes. Write the main function of a transponder in communication satellites. **2**
- Q. 9.** What type of mixtures are separated by fractional distillation? Name the fraction of crude oil whose boiling point is more than 350°C. Where is it mostly used as a fuel? **2**
- Q. 10.** 48 kJ of energy is produced per minute in a nuclear reactor. Calculate the number of fissions which would be taking place in the reactor per second, if the energy released per fission is  $3.2 \times 10^{-11}$  J. **2**
- Q. 11.** State and explain Le-Chatelier's principle. **3**
- Q. 12.** Describe the process of manufacture of ordinary glass. Explain with the help of labelled diagram. **3**
- Q. 13.** Derive the mirror formula. **3**  
Or  
Derive the lens formula. **3**
- Q. 14.** What is mirage? Explain how it occurs. **3**
- Q. 15.** A bulb is rated at 200 V-100 W. What is its resistance? Five such bulbs burn for 4 hours. What is the electrical energy consumed? Calculate the cost if the rate is 50 paise per unit. **3**
- Q. 16.** What are the factors on which the strength of magnetic field produced by current carrying solenoid depends? **3**
- Q. 17.** A solution of copper sulphate was kept in an iron pot. After a few days, the iron pot was found to have a number of holes in it. Explain with the help of equation what reaction took place. **3**
- Q. 18.** Give the working and construction of a nuclear reactor used to generate electricity. **5**

**Q. 19.** Differentiate between raw natural rubber and vulcanised natural rubber. Name one substance which is used as a filler in rubber objects. Give one use of the vulcanized hardened rubber. **5**

**Q. 20.** Give the physical and chemical differences between metals and non-metals. **5**

Or

Explain Baeyer's process. **5**

### **SECTION - B**

**Q. 21.** What is the role of decomposers in our biotic environment? **1**

**Q. 22.** What measures have been taken for conservation of wildlife? State any three measures. **1**

**Q. 23.** Which gland secretes the growth hormone? **1**

**Q. 24.** What is meant by osmoregulation? Explain the importance of osmoregulation for body cells. **2**

**Q. 25.** Distinguish between tropic and nastic movements of plants. **2**

**Q. 26.** Write a short note on Green House Effect. **3**

**Q. 27.** Describe the process of nutrition in Amoeba. Draw a labelled diagram to show the various steps in the nutrition in Amoeba. **3**

**Q. 28.** Differentiate between Aerobic and Anaerobic respiration. **3**

**Q. 29.** Explain the mechanism of transport of water and minerals in a plant. **3**

Or

Write the important functions of blood in our body. **3**

**Q. 30.** What do you mean by artificial propagation of plants? Give its different methods and advantages. **5**

Or

(a) What is a chromosome?

(b) Explain different types of chromosomes with the help of diagrams. **5**