

## SCIENCE—2003 (Outside India)

### SECTION - A

- Q. 1.** Why do we put a minus (negative) sign in the formula for the rate of a reaction in terms of the change in concentration of a reactant but no such sign is put in case of a product? **1**
- Q. 2.** State the main difference between a positron and a neutrino. **1**
- Q. 3.** How is the slurry left over after generation of biogas in a gobargas plant used? **1**
- Q. 4.** Complete the following chemical equation: **1**  
 $\text{Cu}(\text{NO}_3)_2 (\text{aq}) + \text{Zn} (\text{s}) \rightarrow \dots$
- Q. 5.** How are vegetable oils converted to solid fats? **1**
- Q. 6.** A solution contains 0.02 mole HCl in 2.0 litres of solution. Calculate the molarity (or molar concentration). **2**
- Q. 7.** In one fission of uranium  $3 \times 10^{-11}$  J of energy is made available. Calculate the total number of fissions necessary per second to generate a power of 15 kW. **2**
- Q. 8.** State Faraday's laws of electrolysis. **2**
- Q. 9.** What do you mean by the destructive distillation of wood? What are the substances obtained during the process? **2**  
*Or*  
Define the term 'fuel'. What are primary and secondary fuels? To which class of fuel do the following belong: **2**  
Coke, Wood, Petroleum, L.P.G.
- Q. 10.** Differentiate between biodegradable and non-biodegradable substances. Name any *two* biodegradable wastes. **2**
- Q. 11.** Name the substance which is manufactured in Hasenclever plant. What happens to that substance when exposed to air? State *one* use of it. **3**
- Q. 12.** Explain either the red giant stage or white dwarf stage, occurring in the life of a star. **3**
- Q. 13.** If an object of 7 cm height is placed at a distance of 12 cm from a convex lens of focal length 8 cm, find the position, nature and height of the image. **3**
- Q. 14.** Draw the diagram of the floating gas holder type biogas plant and mark on it the gas outlet. **3**
- Q. 15.** Describe contact process for the manufacture of sulphuric acid. **3**
- Q. 16.** How is ethyl alcohol obtained from sweet fruits? Why is air excluded during this process? **3**
- Q. 17.** State the Big Bang Theory. Who proposed the Big Bang Theory? Name the X-ray observatory set up in the outer space. **3**  
*Or*  
Name two types of orbits of artificial satellites. Define each of them.  
(a) Which of these orbits is suitable for communication satellites?

(b) Which of these orbits is suitable for weather monitoring satellites?

Draw a labelled diagram to show it. **3**

**Q. 18.** Explain why in the working of a nuclear reactor naturally occurring uranium need to be enriched before it can be used as a nuclear fuel? What for are cadmium rods used in the nuclear reactors? How is the energy released inside a nuclear reactor handled for useful purposes? **5**

Or

What is an electric motor? With the help of a diagram, describe the working of an electric motor. **5**

**Q. 19.** How iron is extracted from haematite? Explain with the help of a diagram. Give various chemical reactions involved. **5**

**Q. 20.** What are polymers? How are they classified? Give examples of each. **5**

## **SECTION B**

**Q. 21.** Name any *two* types of pigments present in plants which can absorb sunlight energy. **1**

**Q. 22.** State the term used for the transport of food from leaves to other parts of a plant. **1**

**Q. 23.** What is synapse? **1**

**Q. 24.** What is emphysema? How is it caused? **2**

**Q. 25.** Give any four environmental laws passed by the Government of India to conserve and protect our environment. **2**

**Q. 26.** How does the clotting of blood take place? **3**

**Q. 27.** Define tropism. What are the different types of tropisms? **3**

**Q. 28.** What is a genetic disorder? Name any *one* such disorder and state what is the cause of this disorder? **3**

**Q. 29.** What is meant by forest replenishment? State *two* changes you will expect on this account in the surrounding area. **3**

Or

What is meant by soil replenishment? State two ways of its occurrence in nature. **3**

**Q. 30.** What is syngamy? What happens after syngamy? Explain with the help of a diagram. **5**

Or

Draw labelled diagram of the human female reproductive system. Explain the menstrual cycle of the females. **5**