

**SCIENCE and TECHNOLOGY**

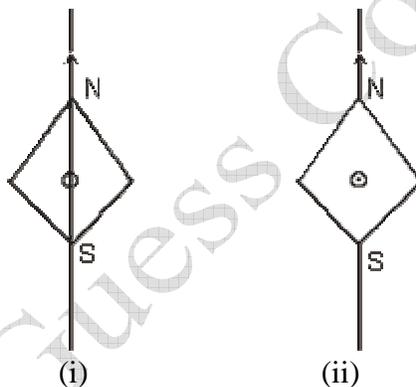
**(GUESS PAPER CLASS X)**

Section – A

1. The pH of a solution is 4. What is the concentration of hydrogen ion? 1
  
2. Calculate how many beta particles are emitted when the following nuclear transformation is brought about.  
$${}_{92}\text{U}^{239} \longrightarrow {}_{94}\text{Pu}^{239}$$
 1
  
3. Name the monomer(s) of Terylene. 1
  
4. Name two components obtained by fractional distillation of petroleum that are not used as fuel. 1
  
5. An ore gives sulphur dioxide on heating. Name the process which is used to enrich this ore. 1
  
6. The mass of star P is 300 times that of star Q. If the mass of Q is nearly equal to that of the sun, which one of them would end up supernova? 2
  
7. What are the uses of following glasses?
  - i. Hard glass
  - ii. Soft glass2
  
8. In a particular fission reaction, a  ${}_{92}\text{U}^{235}$  nucleus captures a slow neutron. The fission products are three neutrons, a  ${}_{57}\text{La}^{142}$  nucleus and a fission product  ${}_Z\text{X}$ . What is the value of Z? 2

OR

- a. The mass number of four different atoms P, Q, R and S are 2, 35, 135, 239. Which one of them would provide the most suitable fuel for nuclear fusion?
- b. Write 1 MeV in terms of Joules (J).
9. When iron fillings are left in copper sulphate solution, it is observed that the blue colour of copper sulphate solution is destroyed.
- a. Explain this observation.
- b. Write the balanced chemical equation to represent the change taking place. 2
10. In the figures, (i) and (ii), current carrying conductors is placed above and below a magnetic needle respectively. Predict the direction of deflection in each case. 2



11. An organic compound 'A' of molecular formula,  $C_2H_6O$  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. 3

OR

Explain the terms:

- a. Esterification  
b. Saponification  
c. Decarboxylation

12. In a resistance R, a current of 1 ampere is passed. What is the amount of electrical energy dissipated in 1 s? 3

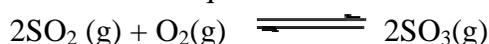
13. a. Calculate the equilibrium constant for the following reaction,



Calculate the equilibrium constant at this temperature.

Given:  $[\text{H}_2] = 0.08 \text{ M}$ ,  $[\text{I}_2] = 0.06 \text{ M}$  and  $[\text{HI}] = 0.5 \text{ M}$

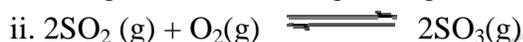
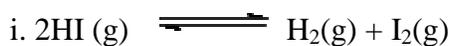
b. Calculate the equilibrium constant for the reaction,



Given : The equilibrium constant for the reaction,



c. In which of the following, the formation of product will be more favoured? Give reasons. 3



14. Define electrolysis. State Faraday's laws of electrolysis. 3

15. a. What keeps the planets move around the sun?  
b. Name the different layers of Earth from outermost to innermost.  
c. What protects the Earth from ultraviolet part of the sun rays? 3

OR

What is geostationary satellite? List two applications of artificial satellites.

16. What happens when mixture of ammonia and oxygen is passed over platinum at a temperature of  $800^\circ \text{C}$ ? Write the chemical equations involved. 3

17. Why cannot the natural rubber be used in making rubber gloves? Describe the process for obtaining suitable rubber for rubber gloves from natural rubber. 3

18. Explain the construction and working of fixed-dome type biogas plant. **5**

**OR**

With the help of a labelled diagram, explain the process of destructive distillation of wood.

19. a. Why is sulphuric acid called the 'King of Chemicals'?  
b. Explain the reactions involved in the manufacture of sulphuric acid by Contact process.  
c. How can it be shown that conc. sulphuric acid is a powerful dehydrating agent? Show it with an activity. **5**

**OR**

a. Name the chief ore of aluminium. Write its chemical formula also.  
b. Describe the steps involved in the extraction of aluminium from bauxite ore using electrolytic method. Draw the labelled diagram of electrolytic cell used.  
c. Why is cryolite added to alumina during extraction of aluminium?

20. In the human eye mention the function of rods. Write a note on defects of eye. **5**

Section – B

21. What is lenticel? **1**

22. What is menarche? **1**

23. What are occupational diseases? **1**

24. What are point and non-point sources of water pollution? **2**

25. What is the function of an incinerator? 2  
**OR**

What are the four practices by which environment can be protected?

**26.** What are the functions of gibberellins? 3

**27.** Explain the process of excretion in earthworm. 3

**28.** Write a short note on light and dark reaction. 3

**29.** What are the cell types in blood? What are their functions? 3

**30.** Explain the process of digestion in human beings. 5

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