Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2079, Phagun/Chaitra

Program: Engineering All | **Full Marks: 60**

Year/Part: I/II (2021) | **Pass Marks: 24**

Subject: Engineering Chemistry II | **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt ALL questions.

1. Define hard water. How can you remove hardness of water by permutit process? [1+3]
2. How can you manufacture ammonia by Haber's process? Explain. [4]
3. Explain Ostwald's process of manufacture of nitric acid (principle and diagram only). [4]
4. What do you mean by chemical fertilizer? Explain its types and characteristics of fertilizers. [1+3]
5. How can you prepare chlorine gas by applying heat in the laboratory? What happen when chlorine reacts with hydrogen and ammonia? [2+2]

6. How can you prepare HCl gas in the laboratory? What happen when HCl reacts with ammonia and $AgNO_3$. [2+2]
7. What are the oxidizing and dehydrating properties of H_2SO_4? [4]

OR

Explain the principle and well labelled diagram of manufacture of H_2SO_4 by contact process. [2+2]

8. What do you mean by allotropic of carbon? Explain the structure of diamond. [1+3]
9. What do you mean by alloys? Distinguish between metals and non-metals. [1+3]
10. Explain the chemical properties of sodium. What are the uses of aluminum. [3+1]
11. What are the properties of calcium? Mention the uses of zinc. [3+1]

Cont. .....

12. What are the general characteristics of coinage metals? What do you mean by plumbosolvency? [2+2]

13. What do you mean by saturated hydrocarbon? Explain the properties of methane. [1+3]

OR

How does vital force theory decline? What do you mean by homologous series? Explain its characteristics. [1+1+2]

14. What do you mean by Markonikov's rule and peroxide effect? Explain with examples. [4]

15. Write short notes on: (any **TWO**) [2×2]
    a. Chemical Properties of Benzene
    b. Aliphatic and Aromatic Compounds
    c. Polythene

Good Luck !