



**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.**

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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  $\text{AgNO}_3$ . [2+2]
7. What are the oxidizing and dehydrating properties of  $\text{H}_2\text{SO}_4$ ? [4]

**OR**

- Explain the principle and well labelled diagram of manufacture of  $\text{H}_2\text{SO}_4$  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]



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

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

**OR**

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

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

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

**Good Luck !**

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**AC**