

2125  
Bachelor of Arts (FYUP) Third Semester  
Industrial Chemistry  
Chemical & Industrial Elemental Process

Max. Marks: 67

Time allowed: 3 Hours

*NOTE: Attempt four questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit. Use of a Scientific Calculator is not allowed.*

x-x-x

I. A) Multiple choice questions:-

(i) The process of petroleum formation is known as:

- A) Photosynthesis
- B) Hydrolysis
- C) Diagenesis and catagenesis
- D) Fermentation

(ii) Fractional distillation separates petroleum components based on differences in:

- A) Density
- B) Boiling point
- C) Color
- D) Viscosity

(iii) The process of coal formation is known as:

- A) Carbonization
- B) Crystallization
- C) Gasification
- D) Sublimation.

(iv) Adsorption is generally:

- A) Endothermic
- B) Exothermic
- C) A neutral process
- D) Neither Endothermic nor exothermic.

(2)

(v) Which of the following is not true about a catalyst?

- A) It alters the rate of reaction
- B) It is specific in nature
- C) It changes the equilibrium constant
- D) It is not consumed in the reaction

(vi) The unwanted impurities associated with ores are called:

- A) Slag
- B) Gangue
- C) Flux
- D) Alloy

(vii) The ore of iron which contains the maximum iron content is:

- A) Haematite ( $\text{Fe}_2\text{O}_3$ )
- B) Magnetite ( $\text{Fe}_3\text{O}_4$ )
- C) Limonite ( $\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ )
- D) Siderite ( $\text{FeCO}_3$ )

(viii) The process commonly used for the leaching of silver is:

- A) Bessemer process
- B) Froth flotation process
- C) Cyanide process
- D) Baeyer's process

(ix) The property of zeolite used in water softening is:

- A) Adsorption
- B) Ion exchange
- C) Filtration
- D) Sedimentation

(9x1)

B) Short Answer Questions

- (i) Write a short note on Reforming processes?
- (ii) Differentiate between absorption and adoption?
- (iii) Define Catalytic poisoning and catalyst promoters.
- (iv) Discuss the various steps involved in the Bayer process.
- (v) Define pulverization in detail.

(5x2)

(3)

**UNIT - I**

- II. a) Explain in detail the process of fractional distillation of petroleum. Describe its principle, process, and the various fractions obtained.  
b) What do you understand by Cracking? Discuss its mechanism in detail along with its objective. (2x8)

- III. (a) Explain the term Coal, its types, and the formation process.  
(b) What is the chemical composition of coal? Discuss in detail its advantages and disadvantages. (2x8)

**UNIT - II**

- IV. Explain in detail with a graph:  
(a) Freundlich Adsorption Isotherm.  
(b) Langmuir Adsorption Isotherm.  
(c) Effect of temperature on Chemical and Physical Adsorption. (5,5,6)

- V. (a) Explain the mechanism of Heterogeneous Catalysis.  
(b) Explain Electrolytic Refining.  
(c) Explain Zone Refining. (5,5,6)

**UNIT - III**

- VI. Explain the Extraction process in detail for the following:-  
(a) Iron  
(b) Silver (2x8)
- VII. (a) Explain the structure, properties, and application of Zeolites.  
(b) What do you understand by the Alumina? Explain in detail its structure, properties, and industrial applications. (2x8)