

Dr. Babasaheb Ambedkar Technological University, Lonere

Question Bank

Department of Chemistry

Subject: Engineering Chemistry (BTBS 102/202)

Course: F.Y.B.Tech (All courses)

Unit No: 1 Water Treatment

- 1) Explain in detail Hot – lime soda process of softening of water with its advantages and disadvantages **6M**
- 2) Explain the determination of Dissolved Oxygen in water by Winkler's method. **6M**
- 3) Define Hard and Soft water. How does the hardness of water determined by using EDTA method? **6M**
- 4) Explain in detail Zeolite process of softening of water with its advantages and disadvantages. **6M**
- 5) Discuss Dissolved Oxygen & How it is determined by Winkler's method. **6M**
- 6) Explain in detail Ion exchange process of softening of water with its advantages and disadvantages. **6M**
- 7) Write a note on Ion exchange resins. **4M**
- 8) Explain in detail types of Ion exchange resins. **6M**
- 9) Explain how DO level of water can be determined by using Iodometric method **6M**
- 10) What is softening of water? Describe Zeolite process of softening of water **6M**
- 11) Write a note on Dissolved Oxygen. **4M**
- 12) How many grams of FeSO₄ dissolved per litre gives 210.5 ppm of hardness?
(Fe = 56, S = 32, O = 16, Ca = 40 , C = 12) **4M**
- 13) The hardness of 50,000 liters of a sample was removed by passing it through a Zeolite softener. The softener then required 200 liters of NaCl solution, containing 125g/ lit for regeneration. Calculate the hardness of the water sample. **6M**
- 14) Discuss the disadvantages of hard water in domestic and industrial use. **6M**

Unit No: 2 Phase Rule

- 1) What is Phase Rule? Explain the term Component and Degree of freedom with suitable examples. **6M**
- 2) Explain in detail one component phase diagram of Water system. **6M**
- 3) Describe Phase diagram of two component Ag – Pb alloy system. **6M**
- 4) What is Phase Rule? Explain the term Phase and Degree of freedom with suitable examples. **6M**
- 5) Draw the Phase diagram of one component Sulphur system and explain the curves, areas, and triple points. **6M**
- 6) Explain in detail Phase diagram of one component Sulphur system. **6M**
- 7) Write a note on Condensed Phase Rule equation and explain Phase diagram of Two – component Ag – Pb alloy system. **6M**
- 8) Explain the term Component with suitable examples. **6M**
- 9) Explain the term Phase, Component and Degrees of freedom involved in the Statement of Phase rule with suitable examples. **6M**
- 10) What is meant by Eutectic point? Explain Silver – Lead two component alloy system with phase diagram. **6M**
- 11) Explain the term Phase and Degree of freedom with suitable examples. **4M**
- 12) Explain the term Component and Degree of freedom with suitable examples. **4M**

Unit No: 3 Corrosion and its Control

- 1) Discuss Sacrificial anodic protection method. What is the condition of a metal to acts as Sacrificial anode? **6M**
- 2) Explain proper Designing method to prevent corrosion. **6M**
- 3) Write a note on Galvanic corrosion. **4M**
- 4) Explain methods to minimize the rate of corrosion. **6M**
- 5) Explain in detail Galvanic corrosion. **6M**
- 6) Explain in details the types of corrosion. **6M**
- 7) Explain in detail various factors affecting the rate of corrosion. **6M**
- 8) Explain fundamental reason for corrosion. **6M**
- 9) Explain Hydrogen evolution mechanism of electrochemical or wet corrosion. **6M**
- 10) Explain Absorption of oxygen mechanism of electrochemical or wet corrosion. **6M**
- 11) Explain mechanism of electrochemical or wet corrosion. **6M**
- 12) Discuss Direct or Dry chemical corrosion. **6M**
- 13) Explain how Oxide film play role in Direct or Dry chemical corrosion. **6M**
- 14) Write a note on Electrochemical or Wet corrosion. **6M**

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| 15) Write a note on Impressed current cathodic protection method. | 6M |
| 16) How nature of metal affects the rate of corrosion. | 6M |
| 17) Discuss nature of corrosive environment affects the rate of corrosion. | 6M |
| 18) Write a note on microbiological corrosion. | 6M |

Unit No: 4 Fuels and Lubricants

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| 1) What are Fuels? How they classified? State characteristics of a good fuel? | 6M |
| 2) Describe in brief types of lubricants. | 6M |
| 3) Explain how the percentage of Nitrogen and Sulphur in coal can be estimated. | 6M |
| 4) Give the physical properties of lubricants. | 6M |
| 5) Give the chemical properties of lubricants. | 4M |
| 6) Describe the process of determination of % of Carbon, Hydrogen and Sulphur
In the coal. | 6M |
| 7) Explain in detail Refining of petroleum. | 6M |
| 8) Give classification of liquid lubricants. | 6M |
| 9) Discuss the term Surface Tension and how it can be determined. | 6M |
| 10) Discuss the Proximate analysis of coal with its significance. | 6M |
| 11) Explain Proximate analysis of coal. | 6M |
| 12) What is coal? Explain various types of coal. | 6M |
| 13) How analysis of N and S in coal can be determined? | 6M |
| 14) Give the classification of fuels and write characteristics of good fuel. | 6M |
| 15) What is fractional distillation and describe refining of petroleum. | 6M |

Unit No: 05 Electrochemistry

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| 1) Define the terms Ohm's law, specific conductance, molecular conductance, equivalence conductance and cell constant with their units. | 6M |
| 2) Explain the method of conductance measurement by wheatstone bridge method and discuss the term cell constant. | 6M |
| 3) Explain conductometric titration with suitable examples. | 6M |
| 4) Write a note on glass electrode. | 4M |
| 5) Explain Ostwald's theory of acid – base indicator. | 6M |
| 6) What is Fuel cell? Explain in detail (H ₂ – O ₂) fuel cell. | 6M |
| 7) Write a note on fuel cell. | 4M |
| 8) Write Nernst equation and how it is applied for the calculation of half-cell potential | 6M |
| 9) Write a note on single electrode potential. | 6M |
| 10) What is the potential of half-cell consisting of Zn electrode in 0.01 M ZnSO ₄ solution | |

At 25°C , $E^{\circ} = 0.763\text{V}$

4M

11) Specific conductivity of an N/50 KCl solution at 25°C is $0.0002765\text{mhos cm}^{-1}$. If the Resistance of cell containing this solution is 500 ohms, what is the cell constant?

6M

12) A 0.01 N KCl solution shows a resistance 225 ohms in a conductivity cell. The specific Conductivity of 0.01N KCl solution at the temperature of experiment is 0.00141 mho/cm if a 0.02N solution of an acid shows a resistance of 80 ohms in the same cell, find the specific and equivalent conductance of the acid.

6M