

**QUESTION BANK**

Title of the Subject: ENGINEERING CHEMISTRY		
Title of the Unit: WATER TREATMENT		Unit No:- 01
Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	Hardness of water is produced due to the presence of.....salts a)K & Na b)Ca & Mg c) Na & Al d) Al & K	1
2	Temporary Hardness is caused due to the presence of of Ca & Mg salts a) Chlorides b) Sulphates c) Bicarbonates d) Phosphates	1
3	For softening of water in Zeolite methodZeolite are used a) Sodium b) Magnesium c) calcium d) phosphorous	1
4	For the Regeneration of sodium Zeolitesolution are used a) NaOH b) HCl c) KCl d) NaCl	1
5	Determination of Hardness of water by EDTA methodindicator used a)Phenolphthalein b) Starch c) Eriochrome Black T d) Methyl orange	1
6	The end point of determination of hardness of water by EDTA method is..... a)Wine red to blue b) blue to wine red c) wine red to colorless d) Blue to Colorless	1
7	Cation exchange resin has functional group a) $-\text{SO}_3\text{H}$ b) $-\text{NM}_3\text{OH}$ c) $-\text{CH}_4$ d) $-\text{SO}_4$	1
8	Anion exchange resin has functional group a) $-\text{SO}_3\text{H}$ b) $-\text{NM}_3\text{OH}$ c) $-\text{CH}_4$ d) $-\text{SO}_4$	1
9	The exhausted cation exchange resin & Anion exchange resin is regenerated by.....andsolutions respectively a) Dil KCl & NaCl b) Dil HCl & Dil NaOH c) Dil NaOH & dil NaCl d) Conc NaCl & Conc HCl	1
10	For the determination of dissolve oxygen in water sample the reducing agent is a) Sodium sulphate b) magnesium Sulphate c) Sodium thiosulphate d) dil NaOH	

Short Answer Question		
Question No.	Question Description	Expected Marks
1	Differentiate hard water and Soft water	2
2	How we can remove Temporary hard water	2
3	What are the salts responsible for Temporary and Permanent hardness of water	2
4	What are the advantages of zeolite method	2
5	Explain the regeneration of Zeolite Bed	2
6	Draw the Structure of EDTA	2
7	What is the Chemical name & formula of zeolite	2
8	What indicator and buffer solution use in EDTA method	4
9	What is importance of Dissolve Oxygen	2
10	What chemicals used in Hot Lime soda Process & how They Remove Hardness	4



Long Answer Question		
Question No.	Question Description	Expected Marks
1	What is Hardness of Water and Explain its Types	6
2	Explain Zeolite Method in Detail	6
3	Explain Ion Exchange Method, its regeneration and advantages & Disadvantages	6
4	How we can determine hardness of water by EDTA method	6
5	Explain Hot Lime Soda Process in detail.	6
6	How we can determine the Dissolve Oxygen by Wrinklers / iodometric titration Method	6
7	Compare the Zeolite Method and Ion Exchange method	6
8	What are reactions take place during softening of water in Zeolite Bed	4
9	How we can regenerate Ion Exchange Resin	4
10	What are advantages and disadvantages of Ion Exchange Resin	4

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QUESTION BANK

Title of the Subject: ENGINEERING CHEMISTRY		
Title of the Unit: PHASE RULE		Unit No:- 02
Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	Reduced Phase Rule is applied to..... a) Water system b) Sulphur system c) Alloys –Metal System d) Ag- Pb System	
2	Phase Diagram of sulphur has triple Points a) Two b) Three c) One d) Four	
3	In water system at triple point the system is..... a) Univariant b) Bivariant c) invariant d) Trivariant	
4	The Correct Phase Rule expression for Ag- Pb system is..... a) $F=C-P+2$ b) $F=C-P+1$ c) $F=3-P$ d) $F= C+ p +1$	
5	Phase diagram of Sulphur has Area and that of water has a) Four, Three b) Three, Four c) Five, Three d) Three, Five	
6	Mixture of gases has Degrees of freedom a) 0 b) 1 c) 2 d) 3	
7	In phase diagram for one component system along curve ,.....phases exist in equilibrium a) One b) Two c) Three d) 0	
8	Phase diagram of one component system is a graph plotted ofVs..... a) Pressure, Temperature b) Pressure, Concentration c) Temperature , Concentration d) Pressure, No of components	
9	In water system the temperature at triple point is a) 0^0 C b) 0.0075^0 C c) 0.75^0 C d) 0.4^0 C	
10	The Curve between Liquid water and vapour is called as..... a) Melting Curve b) Fusion Curve c) Sublimation curve d) Vaporization Curve	
Short Answer Question		

Question No.	Question Description	Expected Marks
1	Give the statement of Phase Rule equation.	2
2	Explain the term Phase with example	2
3	Explain the term degree of Freedom with example	2
4	Explain the term Component with example	2
5	What is Phase Rule equation	2
6	Draw the diagram of Water system	2
7	Draw the diagram of Sulphur system	2
8	What is Reduced Phase Rule Equation	2
9	Define Eutectic system, Eutectic mixture, Eutectic Point.	4
10	Differentiate between one component & two Component System	4

Long Answer Question		
Question No.	Question Description	Expected Marks
1	Explain phase diagram of one component Water system	6
2	Explain phase diagram for two component Pb-Ag alloy system.	6
3	State and explain Gibbs Phase rule. Draw and explain sulphur system	6
4	Explain the different terms involved in Phase rule Equation	6
5	Define the term Phase in Phase Rule equation and give its different examples	6
6	Define the term Component in Phase Rule equation and give its different examples	6
7	Define the term Degree of Freedom in Phase Rule equation and give its different examples	6
8	Explain Reduced Phase Rule equation.	4
9	Compare between water system and sulphur System	4
10	Explain Reduced Phase Rule, and its applications to Two component system	4

**QUESTION BANK**

Title of the Subject: ENGINEERING CHEMISTRY	
Title of the Unit: METALLURGY	Unit No:- 03

Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	Bauxite is ore of..... a) Copper b) Aluminium c) Zinc d) iron	
2	Chemical formula of Galena is..... a) Zns b) Ags c) Fes d) Pbs	
3	Chemical formula of of Haematite ore is a) Fe₂O₃ b) Al ₂ O ₃ 2H ₂ O c) Fe ₃ O ₄ d) Pbs	
4	Froath Floatation method is used for concentration ofores a) Halide ores b) Oxide ores c) Sulphide ores d) Nitrate ores	
5	Gravity separation method is Suitable forores a) Sulphide b) Heavy Oxide c) Nitrate d) Silicate	
6	Roasting process is used for.....ore & calcinations Process is used for Ores a) Oxide, Silicate b) Sulphide, Carbonate c) Nitrates , Phosphates d) Oxide, Nitrats	
7	The Flux combines with impurities present & forms a Substance called as a) Gangue b) Matrix c) Composite d) Slag	
8	In Metallurgy coal act as ----- a) Catalyst b) Reducing agent c) Oxidizing agent d) Reagent	
9	The impurities present in ore like sand, dust, mud, is called as----- a) Slag b) flux c) mineral d) Gangue	
10	Which of the following metal occur in free state in nature? a) Iron b) Cobalt c) Silver d) Silicon	

Short Answer Question		
Question No.	Question Description	Expected Marks
1	Define Metallurgy, mineral, and Ore	4
2	Describe Occurrence of Metals	4
3	What is Ore and give its types	4
4	What is concentration of Ore	2
5	Explain Froath Floatation method of physical Concentration of ore	4
6	Explain Magnetic Separation method of physical Concentration of ore	4
7	Explain Gravity Separation method of physical Concentration of ore	4
8	What is Calcination give its example	4
9	What is Roasting give its examples	4
10	Define Smelting with examples	4

Long Answer Question		
Question No.	Question Description	Expected Marks
1	Define Ore and give its various types	6
2	What is concentration of Ores and explain methods of physical concentration of ores	6
3	What is concentration of Ores and explain methods of Chemical concentration of ores	6
4	What is Calcination and Roasting	6
5	Explain Reduction of ore in Detail	6
6	Explain Chemical Reductions of Ore by , Na/Mg, Al, And Hydrogen	6
7	What is Electrolytic Refining of Ore and explain with Electrolytic refining of Copper	6
8	Differentiate between calcination and Roasting.	4
9	Explain Froath Flotation method and Magnetic separation method of concentration of ores	6

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QUESTION BANK

Title of the Subject: **ENGINEERING CHEMISTRY**

Title of the Unit: **FUELS AND LUBRICANTS**

Unit No:- **04**

Multiple Choice Questions

Question No.	Question Description	Expected Marks
1	With higher percentage ofin any fuel, its calorific value is high a) Hydrogen b) carbon c) Moisture d) Volatile matter	
2	Ultimate analysis if fuel determines..... constituents a) C, H, N & S b) C, Moisture, H c) C and H d) Volatile matter	
3	An ideal Fuel should have.....calorific value a) Low b) Moderate c) High d) Average	
4	An ideal Fuel should have.....ignition temperature Low b) Moderate c) High d) Average	
5	In Fractional distillation, different fractions are obtained from crude oil on the basis of their ----- a) Melting Points b) Aniline point c) Boiling Points d) Density	
6	----- of oil is resistance to its own flow a) Viscosity b) Resistivity c) Density d) Lubrication	
7	For Railway track Joints -----lubricants are used a) Palm oil b) Lard Oil c) Grease d) Graphite	
8	Lubricant with -----Acid value is not Suitable for Machines a) High b) Low c) Positive d) Nrgative	
9	Which of the following fuel has highest calorific value a) Petrol b) Diesel c) Kerosene d) coal	
10	Which of the following fuel is used in Jet engine fuel a)Petrol b) Diesel c) Kerosene d) coal	

Short Answer Question		
Question No.	Question Description	Expected Marks
1	Define fuels. How fuels are classified?	2
2	Mention the characteristics of good fuel.	2
3	Define Calorific value. Mention its types.	4
4	Give list of products obtained in fractional distillation of crude oil.	2
5	What are the functions of lubricants	2
6	Define lubricant and lubrication	2
7	Define Viscosity & Viscosity Index	2
8	Define Flash Point & Fire Point of Lubricating oil	2
9	What are different types of Coal?	4
10	What is Lubricant & give the examples of solid lubricants.	4

Long Answer Question		
Question No.	Question Description	Expected Marks
1	Explain the proximate analysis of coal with its importance.	6
2	Explain the ultimate analysis of coal with its importance	6
3	How percentage of volatile matter and ash is determined? Explain importance of proximate analysis.	4
4	How fractions of crude oil are separated by fractional distillation ?	6
5	How percentage of moisture and percentage of volatile matter is determined by proximate analysis?	4
6	How percentage of carbon and hydrogen is determined by ultimate analysis	4
7	How percentage of sulphur and nitrogen is determined by ultimate analysis?	4
8	Give the Classification of Lubricants	6
9	Mention the different physical properties of Lubricants	6

10	What are different chemical properties of Lubricants.	6
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QUESTION BANK

Title of the Subject: ENGINEERING CHEMISTRY	
Title of the Unit: ELECTROCHEMISTRY.	Unit No:- 05

Multiple Choice Questions		
Question No.	Question Description	Expected Marks
1	Which is the example of weak electrolyte a) HCl b) NaOH c) CH₃COOH d) KOH	1
2	In electrolysistakes place at anode & at cathode a) Reduction, Oxidation b) Oxidation, Reduction c) Deposition, Oxidation d) Reduction , Deposition.	1
3	Glass electrode is used as an indicator electrode in..... a) Potentiometry b) Conductometry c) Phmetry d) None of the above	1
4	Equivalent , Molar and specific conductance..... a) Decreases with increase in temperature b) Increases with increase in temperature C) Increases with decrease in temperature d) Remains constant with increase in temperature	1
5	Unit of molar conductivity..... a) $\Omega \text{ cm}^2 \text{ Mol}^{-1}$ b) $\Omega \text{ cm}^{-2} \text{ Mol}^{-1}$ c) $\Omega^{-1} \text{ cm}^2 \text{ Mol}^{-1}$ d) $\Omega \text{ cm}^2 \text{ Mol}^{-2}$	1
6	Unit of Specific conductance is..... a) Ω b) $\Omega \text{ cm}$ c) $\Omega^{-1} \text{ cm}^{-1}$ d)cm	1
7	The net reaction , $\text{H}^+ + ^-\text{OH} \rightarrow \text{H}_2\text{O}$ is observed in the titration of a) Weak acid Vs Strong base b) Weak acid Vs weak base c) Strong acid Vs Strong base d) weak base Vs Strong acid	1
8	Quinohydrone electrode can not give satisfactory result above----- pH a) 7 b)7.5 c) 8.5 d) 9.5	1

9	Which one of the following is non electrolyte a) NaOH b) HCl c) CCl₄ d) CH ₃ COOH	1
10	The functions of Glass Electrode is like as _____ a) Reversible Hydrogen electrode b) Reversible Chloride electrode c) Irreversible Chloride electrode d) Irreversible hydrogen electrode	1
Short Answer Question		
Question No.	Question Description	Expected Marks
1	Give the Definition & unit of specific conductance of electrolyte.	2
2	Define equivalent conductance of electrolyte solution & give its unit	2
3	Define molar conductance & give its unit	2
4	Discuss the term cell constant	2
5	What is Glass Electrode	2
6	What are the applications of Quinhydrone electrode	2
7	State Debye -Huckel Theory of ionic Distribution	2
8	What are the Conductometric titrations	2
9	Give the working Principle of Glass electrode	2
10	State advantages of Glass Electrode	2

Long Answer Question		
Question No.	Question Description	Expected Marks
1	Explain Debye –Huckel theory of strong Electrolyte	6
2	Explain conductometric Titration with suitable examples	6
3	Explain Glass Electrode	6
4	Explain the factors affecting the conductance of electrolytic solution	6
5	Write a note on Quinhydrone Electrode	6

6	Explain the method of conductance Measurement and discuss the term cell constant	6
7	Define Specific, Equivalent and molar conductance & give its units	6
8	Write a note on Quinonoid theory of acid – base indicators	6
9	Explain Ostwald's theory of acid – base indicators	6
10	Explain the method of conductance measurement.	4