BAPATLA ENGINEERING COLLEGE: BAPATLA, (AUTONOMOUS)
DEPARTMENT OF CHEMISTRY, AAT-I, Sem –I, 2023-24

Class: ¼ B.Tech, *Section*: *Subject*: Engg. Chem *Date*: *Max Marks*: 10 Roll *No.*____

FT-1

1. **Answer all the following questions, each question carries ONE mark.** **4×1=4M**

   a) **Give two examples to coagulants.**
   b) **What is the cause of alkalinity of water?**
   c) **Write the formula of Calgon.**
   d) **Define Electro dialysis.**

   Essay Question **1×6=6M**

2. **What is Hardness of water? Write the types of Hardness. Describe in detail the estimation of hardness using EDTA method.**

   (Or)

3. **Explain in detail the Zeolite Process in softening the hard water.**

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DEPARTMENT OF CHEMISTRY, AAT-I, Sem –I, 2023-24

B.Tech. Section: *Subject*: Engg. Chem *Date*: *Max Marks*: 10 Roll *No.*____

Answer all the following questions, each question carries ONE mark. 4×1=4M

a) Write the structure of EDTA.
b) Define priming.
c) What is disinfection? Give two examples to disinfectants.
d) Define Reverse Osmosis.

Essay Question 1×6=6M

2. What is alkalinity? What are the types of alkalinity? Explain the method of determination of Alkalinity of water.

(Or)

3. Discuss the formation of scales in boilers, ill-effects and methods to prevent their formation (Internal conditioning methods).

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SET-III

Answer all questions.

1. **Answer all the following questions, each question carries ONE mark.** **4×1=4M**
   (a). Which buffer is used in the EDTA titration?
   (b). Name the gases dissolved in water that cause Boiler corrosion.
   (c). What is Potable water?
   (d). Define Sludge.

Essay Question **1×6=6M**

2. **Write a note on Reverse Osmosis.**

(Or)

3. **Describe in detail the softening of the hard water by Ion- Exchange method.**

Bapatla Engineering College:: Bapatla (Autonomous)

Department of Chemistry

SEMESTER-I; Mid-1 Examination

1/4 B.TechECE,CSE, and IT	Engineering Chemistry	20EC-103/20CS-102/20IT-102/CY01
Time: 8:30 am-010:00 am	Max. Marks: 35	23-11-2023

1.Answer the followingshort questions(7X1mark = 7 Marks)

a.	Name any two coagulants.	CO1	BL2	1M
b.	Mention the formula of rust.	CO1	BL2	1M
c.	Explain the reason for alkalinity of water?	CO1	BL3	1M
d.	Define priming	CO1	BL3	1M
e.	What is galvanic corrosion	CO2	BL3	1M
f.	What is the effect of temperature on corrosion	CO2	BL4	1M
g.	Define corrosion?	CO2	BL3	1M

Answer the Following (One question from each Unit) **(2X14 = 28 Marks)**

UNIT – I

2.a	Define scales? Describe their formation, disadvantages, and removal methods.	CO1	BL3	7M
2.b	Calculate the temporary and permanent hardness of a sample of water containing $Mg(HCO)_3$ =73 mg/L; $Ca(HCO)_3$ = 162 mg/L; $MgCl_2$ = 95 mg/L; $CaSO_4$ = 136 mg/L.(Atomic weights of Ca and Mg are 40 & 24 respectively).	CO1	BL2	7M

(OR)

3.a	Write the methods of disinfection of water.	CO1	BL2	7M
3.b	What is hardness? Explain briefly the determination of hardness of water by EDTA method.	CO1	BL4	7M

UNIT – II

4.a	Define dry or chemical corrosion? Explain the mechanism of dry corrosion.	CO2	BL2	7M
4.b	Explain any four factors influencing the rate of corrosion.	CO2	BL2	7M

(OR)

5.a	Explain a) the differential aeration and b) Stress corrosion with examples.	CO2	BL3	7M
5.b	Discuss the controlling method of corrosion by Cathodic protection method.	CO2	BL2	7M

Reg No:

Bapatla Engineering College:: Bapatla (Autonomous)

Department of Chemistry

Semester-1, II-Mid-Term Examination (A. C. Year: 2023-24)

I/4 B. Tech- CSE, ECE & IT	Engineering Chemistry	20CY01
Date: 25.01.2024	Time: 8:30 AM-10:00 A.M	Max. Marks: 35

Question No.1 compulsory (1X7 = 7 M)

1. Answer all questions (1X7 = 7 Marks)

a)	Define Calorific value of a fuel.	CO3	BL2	1M
b)	Name the highest ranked coal.	CO3	BL1	1M
c)	Give two examples of the anti-knocking agents.	CO3	BL1	1M
d)	Write monomers of Bakelite.	CO4	BL2	1M
e)	What are biodegradable polymers? Give example	CO4	BL1	1M
f)	Define conducting polymer.	CO4	BL1	1M
g)	Write any two uses of Aspirin.	CO4	BL3	1M

Answer ONE Question from each unit (2X14 = 28 M)

UNIT – III

2. a	Describe the construction and working of Bomb calorimeter with neat label diagram.	CO3	BL3	10M
2.b	Write short notes on CNG.	CO3	BL2	4M
	(OR)			
3.a	What is flue gas? Discuss the analysis of Flue gas by Orsat's apparatus with a neat labeled diagram	CO3	BL2	10M
3.b	Write a note on Octane and Cetane numbers	CO3	BL1	4M

UNIT – IV

4.a	Illustrate the synthesis, properties and applications of Paracetamol	CO4	BL3	7M
4.b	What are substitution reactions? Discuss SN^1 & SN^2 Substitution reaction with mechanism.	CO4	BL3	7M
	(OR)			
5.a	Write preparation, properties, and uses of PVC	CO4	BL3	7M
5.b	Differentiate between thermoplastics & thermosetting plastics	CO4	BL1	7M

20CS/EC/EI/IT103/CY01

icket Number:

I/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION

ary, 2024

emester

hree Hours

Common to CS, EC, EI & IT

Engineering Chemistry

Maximum: 70 Marks

question 1 compulsorily.

one question from each unit.

(14X1 = 14Marks)

(4X14=56 Marks)

	CO	BL	M
What is scale?	CO1	L2	1M
Hardness of water is expressed in terms of $CaCO_3$ equivalents.-Give reason	CO1	L3	1M
How is caustic embrittlement occurs in boilers?	CO1	L2	1M
Write the formula of Calgon?	CO1	L2	1M
Define Entropy and free energy.	CO2	L2	1M
State Pilling bedworth rule.	CO2	L2	1M
Give the formula of rust.	CO2	L2	1M
Define calorific value.	CO3	L2	1M
Name the highest ranking coal. Give its calorific value	CO3	L2	1M
What is straight run petrol?	CO3	L3	1M
Why is TEL added to petrol?	CO4	L2	1M
State Markownikoff's rule with example.	CO4	L2	1M
List out any two differences between thermoplastic and thermosetting plastics.	CO4	L2	1M
Give the preparation of PVC.			

Unit-I

Explain the principle and procedure involved in the estimation of hardness of water by EDTA method.	CO1	L2	7M
Discuss the different types of scales formed in the boilers. Give the disadvantages of scales in boilers and mention the prevention methods.	CO1	L2	7M
(OR)			
Describe how water is disinfected by chlorination ,ozonization and UV methods.	CO1	L3	6M
Summarize the principle and chemical reactions involved in the softening of water by Ion-exchange process and the regeneration process with a neat diagram .	CO1	L2	8M

Unit-II

Define and derive Nernst equation for single electrode and give its significance.	CO2	L3	7M
What is cathode protection? Explain sacrificial anode protection method.	CO2	L2	7M
(OR)			
Formulate the mechanism involved in the rusting of iron by electrochemical corrosion theory.	CO2	L3	8M
Discuss the effect of rate corrosion on the following , a) Passivity b) position of the metal c) Temperature	CO2	L2	6M

Unit-III

How calorific value of a solid fuel is determined using Bomb calorimeter experiment?	CO3	L3	8M
Explain the method of preparation of biodiesel and give its advantages	CO3	L3	6M
(OR)			
What is knocking? Discuss the significance of knocking and suggest the prevention methods.	CO3	L2	7M
Discuss the analysis of flue gas using Orsats's apparatus and give its significance.	CO3	L3	7M

Unit-IV

Illustrate the mechanism involved in the SN1 and SN2 reactions with example.	CO4	L3	7M
Give the synthesis of Aspirin and give its properties and uses.	CO4	L2	7M
(OR)			
Classify conducting polymers and explain the conduction mechanism in polyacetylene.	CO4	L2	7M
Give the preparation, properties and applications of Bakelite.	CO4	L3	7M