



KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.)
I Semester Final Re - Examination – February 2025
2023 & Previous Admissions

Sacs.1103

Engineering Chemistry (2+1)

Marks: 50
Time: 2 hours

I Fill in the blanks

(10x1=10)

1. The process of liquid water carried along with the steam in boilers is known as
 2. The process of breaking less volatile higher hydrocarbons to more volatile lower hydrocarbons is known as
 3. Galvanizing is the process in which metal is coated on the surface of iron articles.
 4. The monomer of neoprene rubber is
 5. Carbohydrates are stored in animal body as
- State True or False**
6. Corrosion is more rapid if anodic area is small and cathodic area is large.
 7. As the ash content value of coal lowers, quality of coal also lowers.
 8. Colloidal particles do not scatter light.
 9. Thermo gravimetric analysis will not give any information about phase changes of a substance.
 10. Vitamin A is a water-soluble vitamin.

II Write short notes on ANY FIVE of the following

(5x2=10)

1. Calculate the total hardness (in terms of calcium carbonate equivalents) of water sample containing 13.6 mg CaSO_4 , 7.3 mg $\text{Mg}(\text{HCO}_3)_2$, and 9.5 mg MgCl_2 per litre. (Molecular weight of CaSO_4 , $\text{Mg}(\text{HCO}_3)_2$ and MgCl_2 are 136, 146 and 95 respectively)
2. What are corrosion inhibitors? Give an example each for anodic and cathodic inhibitors.
3. Differentiate HCV and LCV; give the relation between them.
4. Distinguish between addition and condensation polymers with suitable example.
5. Give any two examples for solid lubricants and list any two advantages of it.
6. Write the name and structures for the product of hydrolysis of lactose.
7. What is half wave potential in polarographic analysis and mention its significance?

III Answer ANY FIVE of the following

(5x4=20)

1. With a labelled sketch, explain the breakpoint of chlorination.
2. Explain the flue gas analysis using Orsat apparatus.
3. Give the preparation, any two properties and applications of Buna-S.
4. Distinguish between thermoplastic and thermosetting plastic. Give any two examples for each.
5. Describe dialysis and ultrafiltration methods for the purification of colloids.
6. Explain the classification of lipids based on chemical composition.
7. A dye solution of concentration 0.005 M shows an absorbance of 0.48 at 476 nm using in a 1 cm cuvette; while the test solution of the same dye shows absorbance 0.36 under the same conditions. Find the concentration of the test solution and molar extinction coefficient of the dye.

IV Write an essay on ANY ONE of the following

(1x10=10)

1. Explain the following types of corrosion in detail.
 - a) Galvanic corrosion
 - b) concentration cell corrosion
 - c) stress corrosion
2. Discuss water softening by ion exchange method and also explain the method for the regeneration of exhausted resin.
