SYED AMMAL ENGINEERING COLLEGE

(An ISO 9001:2008 Certified Institution)

Dr. E.M. Abdullah Campus, Ramanathapuram - 623502

Unit – I Water Technology

1. Define Boiler Feed Water. What are the requirements of Boiler Feed Water?
2. What is Zeolite? How is water softened by zeolite? Give equations.
3. Explain formation of deposits in steam boilers and heat exchangers.
4. What are the disadvantages in scale formation? Explain in detail. (Or) What are the disadvantages formation of deposits in steam boilers and heat exchangers? (Or) Write short notes on (i). Wastage of fuels. (ii). Decrease in efficiency. (iii). Boiler Explosion.
5. What are the disadvantages using hard water in boilers?
6. Explain prevention of scales formation.
7. Write short notes on Caustic Embrittlement.
8. Explain Internal conditioning methods of softening hard water.
9. Write short notes on Boiler corrosion / Explain boiler corrosion in detail / Write short notes on Boiler troubles – Boiler corrosion.
10. Explain priming and foaming (carry over).
11. What is Desalination? Describe desalination of by Reverse Osmosis method with neat diagram. (Or) Explain the reverse osmosis process for desalination of brackish water in detail.
12. Explain demineralization process in detail.

Unit – II Electro Chemistry and Corrosion

1. What is electrochemical cell? Explain with example of Daniel cell.

2. How electrochemical cell is measured? How Emf is measured by potentiometrically?

3. What are electrochemical series? Give its applications.

4. Derive Nernst equation.

5. What is Chemical corrosion? Explain with its types.

6. Explain Electro chemical corrosion with its types.

7. Distinguish between Chemical corrosion and Electro chemical corrosion.
8. What are the factors influencing corrosion?
9. Explain the Sacrificial anode and impressed current techniques for the preventions of corrosion.
10. What is paint? What are the constituents and their functions in paint?
11. Explain the electroplating of Copper.
12. Explain the Electro less plating of Nickel.

Unit – III Energy Sources

1. Distinguish between Nuclear fission and nuclear fusion reaction.
2. Define nuclear fission reaction. Explain with one example in detail.
3. Define nuclear fusion reaction. Explain with one example in detail.
4. Explain Nuclear Reactor-Power Generator with neat diagram./ Light Water Reactor
5. Explain Breeder reactor with reactions.
6. Define solar cell. Explain solar energy conversion in detail.
7. Write a short note on Wind Energy.
8. Define Battery. Explain with its types.
9. Explain Alkaline Battery with neat diagram and cell reactions. With its significance.
10. Explain Lead acid storage battery. With its significance.
11. Explain Nickel – Cadmium battery with cell reactions. With its significance.
12. Explain Lithium batteries in detail. With its significance.
13. Explain Hydrogen- Oxygen Fuel cell / [H2 – O2] Fuel cell. With its significance.

Unit – IV Engineering Materials

1. What are Abrasives? Explain with classification.
2. Write short notes on (i). Grinding Wheel. (ii).Abrasive paper and cloth.
3. Define refractories. What are its characteristics? Explain with classification and its properties.

4. Explain the properties of refractories.
5. How Alumina, Magnesite and Silicon carbide are manufactured? Manufacture of Alumina bricks:
6. How Portland cement is manufactured?
7. Explain the properties of Portland cement.
8. Write short notes on special cements like waterproof and white cement.
9. Explain the manufacture the glass.
10. Explain the types and properties and uses of glass.

Unit – V Fuels Combustion

1. How fuels are classified. Give one example for each.
2. Define calorific value. Explain higher & lower calorific value.
3. Explain ultimate analysis. Give its significance.
4. How Metallurgical coke is manufactured by Otto-Hoffman's method?
5. What do you mean by hydrogenation of coal? How Synthetic petrol is manufactured by Bergius Process? Or how solid fuel is converted into liquid fuel? Explain in detail.
6. Explain the following - Compressed natural gas (CNG) Liquid petroleum gas. (LPG)
7. Explain Water gas with reaction.
8. Explain Producer gas with reaction.
9. Describe flue gas analysis by Orsat's apparatus method.