

- Q.26 Explain high shear mixers used in the bleaching setup in brief?
- Q.27 Discuss importance of good mixing of pulp and bleaching chemical?
- Q.28 Explain the preparation calcium hypochlorite?
- Q.29 What is total chlorine free bleaching? Discuss its significance?
- Q.30 Discuss bleaching of pulp by chlorine dioxide in brief?
- Q.31 What is the need and importance of pulp bleaching?
- Q.32 What are advantages and disadvantages in use of hypochlorite for pulp bleaching?
- Q.33 Discuss the different variables affecting the bleaching process in brief?
- Q.34 Discuss the brightness reversion in brief?
- Q.35 What is caustic extraction? Why it is used in pulp bleaching?

#### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Discuss the production of a fully bleached chemical pulp with the help of neat flow diagram in detail?
- Q.37 Describe medium consistency oxygen delignification with the help of a neat diagram?
- Q.38 Explain the agitators used for bleaching of pulp in detail with the help of neat diagram?

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#### **3rd Sem / Chem. P & P Subject:- Pulp Bleaching**

Time : 3Hrs.                                M.M. : 100

#### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The lignin content found in unbleached chemical pulps obtained from softwood kraft (sulfite) process on oven dry basis is?
- a) 0-3%                                      b) 3-6%
- c) 6-9%                                      d) 9-12%
- Q.2 What is the ISO brightness of a black, nonreflecting material on absolute scale?
- a) 0%                                         b) 25%
- c) 75%                                        d) 100%
- Q.3 Which of the following bleaching chemicals react as nucleophilic agent ?
- a) Cl<sub>2</sub>                                        b) O<sub>2</sub>
- c) O<sub>3</sub>                                        d) H<sub>2</sub>O<sub>2</sub>
- Q.4 Bleaching reactions of chemical pulps are equivalent to what?
- a) Oxidation reactions    b) Reduction reactions
- c) Redox reactions                        d) None of the above

- Q.5** What is value of oxidizing equivalent of O<sub>2</sub> in OXE kg<sup>-1</sup>?
- a) 75
  - b) 100
  - c) 125
  - d) 150
- Q.6** What is brightness level of fully bleached sulfite (dissolving) pulps?
- a) 85% ISO
  - b) 90% ISO
  - c) 95% ISO
  - d) 100% ISO
- Q.7** The lignin content of unbleached pulp, expressed by which number?
- a) Reynold number
  - b) Octane number
  - c) Cetane number
  - d) Kappa number
- Q.8** Which pH favors the generation of hypochlorite ions in hypochlorite bleaching?
- a) pH < 3
  - b) pH = 5
  - c) pH = 7
  - d) pH > 9
- Q.9** What is chemical formula of chlorine dioxide?
- a) ClO<sub>2</sub>
  - b) ClO
  - c) Cl<sub>2</sub>O
  - d) Cl<sub>2</sub>O<sub>2</sub>
- Q.10** The homogeneity of the mixture composed of pulp and bleaching agent is achieved by?
- a) Mixing
  - b) Grinding
  - c) Loading
  - d) Feeding

## SECTION-B

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11** What is full form of ECF in pulp bleaching?
- Q.12** Write name of one bleaching chemical which react as electrophilic agent?
- Q.13** What is main disadvantage of using hypochlorite as bleaching agent?
- Q.14** What is purpose of washing step in pulp bleaching?
- Q.15** What is the main objective of first stages in the multistage bleaching?
- Q.16** Define the bleaching?
- Q.17** Write name of major equipments used in the basic set-up of a bleaching stage?
- Q.18** What is full form of AOX in pulp bleaching?
- Q.19** Define the delignification?
- Q.20** What is brightening stage?

## SECTION-C

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21** Discuss the different factors affecting the bleachability of pulp in brief?
- Q.22** How brightness of pulp is measured, discuss in brief?
- Q.23** Explain the concept of prebleach in brief?
- Q.24** Discuss the basic setup for bleaching stage in brief?
- Q.25** Describe the agitators used for bleaching of pulp?