

- Q.32 Discuss briefly black liquor oxidizers.
 Q.33 Explain the principle of venturi scrubber.
 Q.34 Write a short note on total cycle of causticizing process.
 Q.35 Give soda black liquor composition.

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**5th Sem., Branch : P & P
 Subject : Chemical Recovery**

Time : 3 Hrs.

M.M. : 100

SECTION-A

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

- Q.36 Explain construction and working principle of JMW recovery furnace with a neat diagram.
 Q.37 Calculate the water evaporated from B/L for following data. Solid concentration of weak B/L = 15% Solid concentration of heavy B/L = 55% feed rate of weak B/L = 520 kg/hr.
 Q.38 Write short note on any two of the following
 a) Cascade type Evaporator
 b) Lime kiln
 c) Feeding arrangement in MEE

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

- Q.1 Write the formula of soda
 a) Na_2S b) NaOH
 c) Na_2CO_3 d) None
 Q.2 Expand ${}^0\text{Be}$
 a) Degree beside b) Degree barium
 c) Degree become d) Degree baume
 Q.3 Write molecular weight of sodium sulphate
 a) 102 b) 92
 c) 142 d) 40
 Q.4 White Liquor is used in
 a) Furnace b) Digester
 c) Evaporator d) None
 Q.5 Concentration range of Weak black liquor is
 a) 45-55% b) 55-65%
 c) 14-18% d) None

- Q.6 Cyclone is a type of
 a) Evaporator b) Condenser
 c) Boiler d) None
- Q.7 Write Molecular weight of sodium sulfide
 a) 35 b) 78
 c) 141 d) 38
- Q.8 Calcination reaction is carried out
 a) Lime Kiln b) Lime Slakar
 c) Cauticizer d) None
- Q.9 Expand MEE
 a) Multi effect Evaporator
 b) Multiple effect Evaporator
 c) Multi efficiency Evaporator
 d) None
- Q.10 Write the chemical formula of salt cake
 a) Na_2CO_3 b) NaOH
 c) Na_2SO_4 d) None

Section-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Write any one Chemical property of black liquor.
- Q.12 Mention any one physical characteristics of sulfate black liquor.

- Q.13 Write name of chemical compound which is recovered in recovery section?
- Q.14 What is the source of silica in black liquor?
- Q.15 Where green liquor is used?
- Q.16 Define Causticity.
- Q.17 Expand BPR.
- Q.18 Name any one evaporator used in paper industry.
- Q.19 Write Chemical Formula of lime mud.
- Q.20 What is function of Lime Slaker.

Section-C

Note: Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 Write a note on lime mud washing process.
- Q.22 Define Active Alkai and sulphidity.
- Q.23 What are the reactions involved reduction zone during incineration of black liquor?
- Q.24 Draw a neat sketch of single effect evaporator.
- Q.25 Write the startup and shut down procedure of MEE.
- Q.26 Explain working of White liquor clarifier.
- Q.27 Define BPR and explain effect of black liquor solids on it.
- Q.28 Write a short note on dred washer from black liquor.
- Q.29 Define viscosity of black liquor.
- Q.30 Convert 520gm of Na_2CO_3 as Na_2O into Na_2Co_3 as such.
- Q.31 Write a note on lime mud burning.