

Total number of printed pages-3

53 (IE 812) ICPI

2019

**INSTRUMENTATION AND CONTROL IN  
PAPER INDUSTRY**

Paper : IE 812

Full Marks : 100

Time : Three hours

***The figures in the margin indicate  
full marks for the questions.***

Answer **any five** questions.

- (a) Explain with neat block diagram, the process of manufacturing of pulp from wood. 15

(b) Discuss the Solvent Extraction Process from wooden chips during the Pre-Pulping process. 5
- (a) Discuss the KRAFT process and recovery of active chemicals (Kraft liquor cycle), causticizing process.



Contd.

(b) What is the substitute for chlorine in this process? 18+2

3. (a) What shall be the selection criteria of Instruments for

(i) Measurements of Volumetric and Mass Flow, compensation for gas and liquid flow

(ii) Temperature measurement? 10

(b) Explain with a neat diagram, the measurement and control operation for pH. 10

4. (a) Explain with a neat diagram, the following control loops at Pre-processing stage of Pulp manufacturing : 10

(i) Controls for steaming vessel

(ii) Control of Chip Chute.

(b) Explain with a neat diagram, the following control loops for Digester : 10

(i) Chip Liquor Level Control

(ii) Digester Temperature Control.

5. (a) Explain with a neat diagram, the operation of conveyor belts for transportation of wood chips using LOCAL, REMOTE, AUTO for safe operations and motor overrides to control the MOTOR. 8

(b) Explain the stock preparation using ratio control at the mixing chest of a paper machine. 6

(c) Explain the use of Pulp additives and fillers to get a proper quality of paper. 6

6. (a) Explain the working of Basis weight control. 10

(b) Discuss the importance of Alarm Management function for your paper mill. How will you plan your activities in deciding this function? 10

7. Write short notes on : (*any two*) 20

(i) Applications and uses of Data Logger

(ii) Graphic Displays and Alarm

(iii) SCADA and modes of Communication Topologies

(iv) Components of Network Control System.

