PAPER ID-310416

Subject Code: KCH057

Roll No: | | | | | | | | | | | | | |

B TECH
(SEM-V) THEORY EXAMINATION 2020-21
PROCESS INTENSIFICATION

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a) Define Process integration.
b) Write short notes on Data extraction
c) Define stream splitting
d) Discuss the shell targeting
e) Discuss the Bath formula
f) Discuss about Heat pump.
g) Write short notes on Gas turbine
h) Discuss the Pinch temperature
i) Define correction factor
j) Define Overlap.

SECTION-B

2. Attempt any *three* of the following: 10 x 3 = 30

a) Explain the areas of application and techniques available for Process integration, onion diagram.
b) Explain about the Cost targeting and Number of units targeting in Heat Exchanger Network?
c) Give the detail procedure for the design of maximum energy recovery in Heat Exchanger Network?
d) Discuss about the Composite curve and Grand composite curve in Pinch Technology?
e) Explain basic elements of Pinch technology. Discuss the optimization and super targeting by pinch analysis.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain the Design of Heat Exchange Net work with the help of grid diagram.
b) Give the detail steps for the multiple utilities and pinches.

4. Attempt any *one* part of the following: 10 x 1 = 10

a) Discuss the role of thermodynamics laws in Pinch Technology.
b) Explain the Key Steps of Pinch Technology: Data extraction and super targeting.

5. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain about the Energy targeting and Area targeting in Heat Exchanger Network?
b) Explain the Problem table Algorithm with example?

6. Attempt any *one* part of the following: 10 x 1 = 10

a) Describe the Designing of Heat Exchanger Network in heuristic rules and Pinch design methods?
b) Write a short note on threshold approach temperature and optimum approach temperature for heat exchanger networks

7. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain the Heat and Power Integration of the equipments steam turbine and gas turbine.
b) Write short notes on the following heat integration of the equipments:
   i. distillation column.
   ii. Heat Engine.