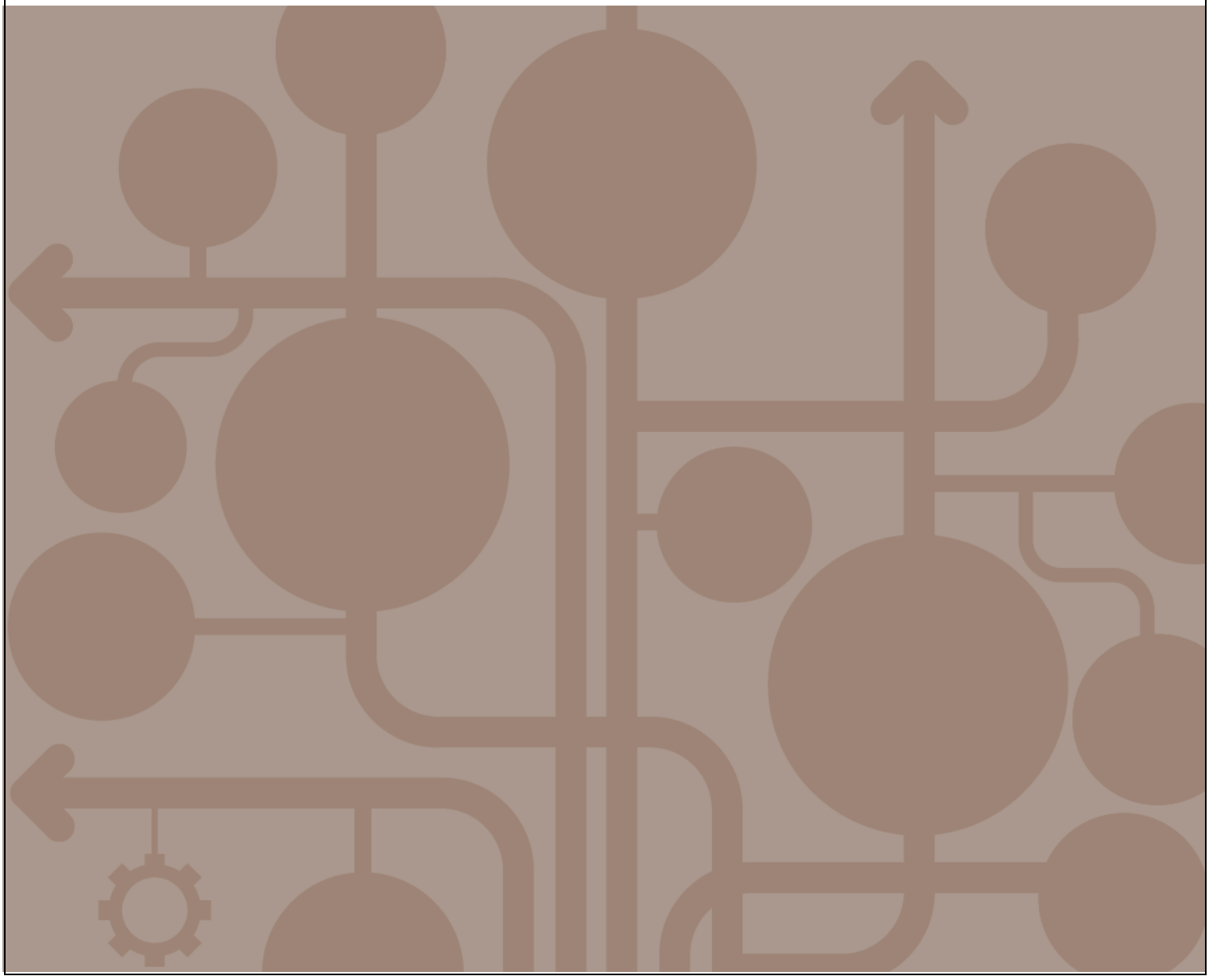
Assessment Blueprint

Chemical / Refining Process Technician



CHEMICAL/REFINING_PROCESS_TECHNICIAN

Specific Competencies and Skills Tested in this Assessment:

Control Separation Systems
Monitor and regulate distillation system
Monitor and regulate stripping system
Monitor and regulate filtration system
Monitor and regulate absorption system
Monitor and regulate extraction system
Monitor and regulate dehydration system

Control Heat Exchange Systems
Monitor and regulate fired heaters/furnace system
Monitor and regulate boiler system
Monitor and regulate cooling water system
Monitor and regulate refrigeration system
Monitor and regulate heat exchanger system

Control Reaction Systems
Monitor and regulate continuous reaction system
Monitor and regulate batch reaction system

Control Generation Systems
Monitor and regulate steam system
Monitor and regulate electrical generation/distribution system

Control Waste Treatment/Destruction Systems
Monitor and regulate waste incineration system
Monitor and regulate flare system
Monitor and regulate storm water system
Monitor and regulate waste water system

Specific Competencies and Skills continued:

Control Utility Systems
Monitor and regulate instrument air system
Monitor and regulate utility air system
Monitor and regulate potable water system
Monitor and regulate fire water system
Monitor and regulate boiler feed water
Monitor and regulate condensate system
Monitor and regulate natural gas system
Monitor and regulate fuel gas system
Monitor and regulate nitrogen system

Control Chemical Materials Handling and Storage
Receive chemical materials
Store chemical materials
Transfer chemical materials

Troubleshoot Process Abnormal/Equipment Malfunctions
Diagnose malfunction or abnormality
Remedy equipment/process malfunction

Maintain Safe and Healthful Work Environment
Conduct preventative SHE inspections
Conduct SHE incident and hazard investigations
Instruct individuals entering operating area in SHE policies and procedures
Comply with company policies and procedures
Comply with local, state, and federal policies and procedures

Written Assessment:

Administration Time: 3 hours
Number of Questions: 154

Areas Covered:

20%	Control Separation Systems
15%	Control Heat Exchange Systems
10%	Control Reaction Systems
6%	Control Generation Systems
5%	Control Waste Treatment/Destruction Systems
12%	Control Utility Systems
6%	Control Chemical Materials Handling and Storage
12%	Troubleshoot Process Abnormal/Equipment Malfunctions
14%	Maintain Safe and Healthful Work Environment

Sample Questions:

If feed rate is increased to the distillation tower, one action the operator should consider is

A. increase the heat input into the system
B. increase the pressure on the system
C. decrease the product flow
D. decrease the overhead temperature

High head pressure in a refrigeration system will

A. reduce efficiency
B. decrease temperature
C. have no effect
D. increase viscosity

A batch reactor has been charged with two reactants, X and Y. In a 1000 pound batch reactor, reactant X is overcharged by 100 pounds. A corrective action would be to

A. adjust to the proper ratio
B. let the reaction go as is
C. increase agitator speed
D. increase length of reaction

Steam coils are used to

A. transfer heat
B. increase volume
C. diffuse steam
D. decrease pressure

When waste water is gently agitated for a period of time so that small particles in the water stick together and settle out, the process is called

A. aeration
B. flocculation
C. ion-exchange
D. corrosion control

Condensate is returned for

A. cooling tower make-up water
B. domestic hot water
C. boiler feed water make-up
D. distilled water

The product in a tank is off-specification. You should initially consider doing all of the following EXCEPT

A. bend the product
B. resample
C. reprocess the product
D. send to waste recovery

You have lost flow through a control valve. A short term solution to the problem is to

A. open the bypass valve
B. immediately shut down the process
C. close the upstream block valve
D. place the controller in automatic mode

The red diamond at the top of the NFPA symbol stands for _____hazard.

A. specific
B. health
C. flammability
D. reactivity

If a storm water analysis exceeds water permit criteria, the water

A. cannot be released
B. may be released
C. cannot be treated
D. cannot be recycled