

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester: 4th

Subject: Chemical Process Calculations (Theory)

Branch: Chemical Engineering

Name of the Faculty Member: Veda Prakash

| Period | Module/Number | Topic to be covered |
|--------|---------------|--|
| 1 | 01 | Units and dimensions |
| 2 | 01 | Chemical equation and stoichiometry |
| 3 | 01 | Limiting reactant and excess reactant |
| 4 | 01 | Degree of conversion |
| 5 | 01 | Yield |
| 6 | 01 | Extent of reaction |
| 7 | 01 | Ideal gas law, equation of state |
| 8 | 02 | Vapour pressure, Clausius-Clapeyron equation |
| 9 | 02 | Humidity, relative and percentage saturation |
| 10 | 02 | Dry and wet bulb temperature |
| 11 | 02 | Material balance for mixing operation |
| 12 | 02 | Drying operation |
| 13 | 02 | Crystallization |
| 14 | 02 | Evaporation |
| 15 | 02 | Distillation |
| 16 | 03 | Combustion |
| 17 | 03 | Material balance with chemical reaction |
| 18 | 03 | Recycle operation |
| 19 | 03 | Material balance with bypass operation |
| 20 | 03 | Purge calculations |
| 21 | 03 | Heat capacity, internal energy |
| 22 | 03 | Enthalpy, mean heat capacity |
| 23 | 03 | Heat capacity of mixture of gases |
| 24 | 03 | Heat capacity of solids and liquids |
| 25 | 03 | Energy balance with chemical reaction |
| 26 | 04 | Standard heat of reaction at constant pressure |
| 27 | 04 | Effect of temperature on heat of reaction |
| 28 | 04 | Adiabatic reaction temperature |
| 29 | 04 | Heat of solution and mixing |
| 30 | 04 | Estimation of heat of fusion |
| 31 | 04 | Estimation of heat of vaporization |
| 32 | 04 | Enthalpy- composition diagram |
| 33 | 04 | Standard heat of combustion |
| 34 | 04 | Standard heat of formation |
| 35 | 04 | Hess law of constant heat summation |