

Total No. of Questions : 8]

[Total No. of Printed Pages : 2

Roll No

CM-3003-CBGS

B.E., III Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Material and Energy Balance

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. Define Absolute humidity, Percent humidity and Relative humidity respect to humidification operation.
2. Classify the material balance. Discuss the various methods involved for solving material balance problems without chemical reactions.
3. a) Define vapour pressure, humid heat and dew point.
b) Explain humidification and dehumidification process.
4. a) Define Adiabatic flame temperature and Tests for proximate analysis.
b) Define gross calorific value and net calorific value.
5. Explain: Limiting reactant, excess reactant, percent excess reactant mass fraction, mass% and mole fraction and mol%.

CM-3003-CBGS

PTO

[2]

6. An aqueous solution of Acetic Acid of 30% concentration (by mass) has density 1040 kg/m^3 . Find Molarity, normality and molality of the solution.

7. A gas mixture has the following composition by volume:
Ethylene -30.6%, Benzene - 24.5%, Oxygen - 1.3%,
Methane -15.5%, Ethane - 25%, Nitrogen - 3.1%
Find out:
 - i) The average molecular weight of gas mixture
 - ii) The composition by weight

8. Write short notes on following: (Any two)
 - a) Recycle and by-pass streams.
 - b) Effect of temperature and pressure on heat of reaction.
 - c) Energy balance with and without chemical reaction.

CM-3003-CBGS