CHEN2AA0 Progress Assessment I Exam
Representative Topics and Areas of Coverage

Calculus: derivative at a point
Calculus: derivative of a function
Calculus: derivative of function (sqrare root)
Calculus: derivative of trig function (chain rule)
Calculus: derivative of trig function (product)
Calculus: differentiation of function
Calculus: evaluation of a definite integral
Calculus: minimum of function on interval
Calculus: slope of function at point

Chemistry: balance chemical reaction
Chemistry: balance chemical reaction (redox)
Chemistry: calculation of yield
Chemistry: determination of empirical formula from weight data
Chemistry: elemental analysis of compound
Chemistry: elemental analysis of mixture
Chemistry: excess reactants
Chemistry: ideal gas law
Chemistry: molarity
Chemistry: partial decomp of potassium perchlorate (volume of oxygen at STP)
Chemistry: production of Na_3PO_4
Chemistry: thermal decomposition
Chemistry: weight composition of element in compound

Energy balances: conversion of energy units (calories, weight loss)
Energy balances: cooling of pure substance (water) with condensation
Energy balances: heat dissipation
Energy balances: integration of Cp to get Q (H)
Energy balances: mCpdt = Q
Energy balances: saturated steam properties
Energy balances: work done during expansion of gas

Mass balance: Antoine's equation
Mass balance: molar volume
Mass balance: recycle stream problem
Mass balances: balance involving burning C to form CO and CO_2
Mass balances: balance involving wet/dry basis
Mass balances: blending pigments
Mass balances: calculate pressure from RK EOS (given)
Mass balances: change in moles during chemical reaction (gas phase)
Mass balances: density of ideal gas
Mass balances: density, void fraction
Mass balances: evaporator problem

Mass balances: excess reactants
Mass balances: excess reactants (ppm concept)
Mass balances: ideal gas law
Mass balances: mass balance with density/weight/volume relationships
Mass balances: mass balance with flammability limit
Mass balances: material balance involving excess air
Mass balances: material balance involving partial pressure
Mass balances: partial pressure of gas mixture (ideal gas)
Mass balances: pressure change
Mass balances: pressure change with depth (given)
Mass balances: slope/intercept for transformed axes
Mass balances: specific gravity and solutions
Mass balances: volume via ideal gas law

Math/algebra: area of rectangle
Math/algebra: reciprocals
Math/algebra: word problem involving costs and profits
Math/algebra: word problem involving velocities

Math/geometry/trig: circle properties (perimeter, diameter) and velocity
Math/geometry/trig: legs of a triangle
Math/geometry/trig: rate of change of height while filling a cylindrical tank
Math/geometry/trig: rate of change of the area of a square
Math/geometry/trig: related rates

Physics: conversion of fuel to mechanical energy (gasoline: miles/gal)
Physics: conversion of mechanical energy to thermal energy (hp, kcals)
Physics: kinetic energy of two bodies
Physics: potential energy
Physics: vector math
Physics: vector math (addition)
Physics: work / force x distance etc