Q.27 Explain activation energy.

Q.28 Difference between Homogeneous and Heterogeneous reactions.

Q.29 State the limitations of first law of thermodynamics.

Q.30 Explain Reversible and Irreversible reaction with examples.

Q.31 Drive Expression for ideal gas equation.

Q.32 Explain the effect of temperature on Equilibrium constant.

Q.33 Explain the significance of Vander walls equation.

Q.34 Define reactor and explain basic types of reactors in brief.

Q.35 Define isobaric and polytropic process.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions.   (2x10=20)

Q.36 Drive an expression of rate constant for second order reaction.

Q.37 Explain the construction and working detail of steady state mixed flow reactor.

Q.38 Write short note on any two of the following
   i)   Open & isolated system
   ii) Elementary & non-elementary reaction
   iii) State and path function

(20)   (4)   180642/120642/030642

4th Sem / P & P
Subject:- Chemical Engineering Thermodynamics and Reaction Engineering

Time : 3Hrs.   M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory   (10x1=10)

Q.1 The rate constant of a first order reaction depends on the _____
   a) Temperature   b) Reactants
   c) Time   d) None

Q.2 Which of the following is path function
   a) Heat   b) Work
   c) Both   d) None

Q.3 Kelvin is a unit of
   a) Work   b) Pressure
   c) Temperature   d) Entropy

Q.4 Which of the following is a type of thermodynamic system?
   a) Open system
   b) Closed system
   c) Thermally isolated system
   d) All of these

Q.5 The _____ law of thermodynamics deals with thermal equilibrium.

(1)   180642/120642/030642

a) Third   b) Second

c) Zeroth   d) First

Q.6 Convert 20 Celsius into Kelvin

a) 293   b) 283

c) 273   d) None

Q.7 MFR stands for

a) Mix flow reaction

b) Maximum free reaction

c) Mix flow reactor

d) Mixing free reactor

Q.8 Which of the following thermodynamic law gives the concept of enthalpy?

a) First law of thermodynamics

b) Second law of thermodynamics

c) Third law of thermodynamics

d) Fourth law of thermodynamics

Q.9 Heat flow into a system is_____ and heat flow out of the system is_____.

a) positive, positive   b) negative, negative

c) negative, positive   d) positive, negative

Q.10 A process in which volume is remain constant is known as_____?

a) An isochoric process

b) An isothermal process

c) An adiabatic process

d) An isobaric process

SECTION-B

Note: Objective type questions. All questions are compulsory.   (10x1=10)

Q.11 State Daltons law.

Q.12 What is exothermic reaction?

Q.13 What is entropy?

Q.14 What is molecularity?

Q.15 Name types of basic reactors.

Q.16 Mention unit of heat.

Q.17 Write full form of CSTR.

Q.18 Define System.

Q.19 Write advantage of Batch Reactor.

Q.20 What is Extensive properties.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions.   (12x5=60)

Q.21 Discuss Carnot cycle efficiency.

Q.22 Discuss about the effect of concentration and surface area of reacting species on the rate of chemical reaction.

Q.23 With diagram, discuss about the batch reactor.

Q.24 State and explain Zeroth order reaction.

Q.25 State Amagat's law and Raoult's law.

Q.26 Write down the difference between open and closed system.