Q.27 State the second law of thermodynamics.

Q.28 Explain the variables affecting the rate of reaction.

Q.29 Define elementary and non-elementary reactions.

Q.30 Write a note on work for ideal gas undergoing polytropic process.

Q.31 Define equilibrium constant.

Q.32 What is the entropy change for reversible and irreversible process?

Q.33 Define fundamentals of chemical reaction.

Q.34 Differentiate between isometric and isobaric process.

Q.35 What is ideal gas law?

SECTION-D

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

Q.36 50% of a first order reaction is complete in 35 minutes. Calculate the time required to complete 90% of the reaction.

Q.37 Write short note on

a) Effect of Temperature on equilibrium constant

b) Graphical Comparison of Batch, Mixed and Plug flow reactor.

Q.38 Explain the construction and working of any one reactor with neat and clean diagram.

Roll No. .....

4th Sem. / P & P

Subject : Chemical Engineering Thermodynamics & Reaction Engineering

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 Select the largest unit of energy

a) Kelvin b) Joule

c) Calorie d) Erg.

Q.2 The catalyst in a first order chemical reaction charges the _____.

a) Activate on energy b) Equilibrium constant

c) Heat of reaction d) None

Q.3 Melting of wax is accompanied with _____ in entropy.

a) Increase b) Decrease

c) No Change d) None

Q.4 First law of thermodynamic is based on law of conservation of _____.

a) Mass b) Energy

c) Momentum d) None

Q.5 What is the unit of activation energy?

a) Mol b) K

c) J/Mol d) Mol.k

Q.6 For an ideal gas, the enthalpy_____pressure.

a) Increases with b) Independent of

c) Decrease with d) None

Q.7 _____ constant is a type of equilibrium constant.

a) Association b) Solubility

c) Dissociation d) Decay

Q.8 _____ decreases during adiabatic throttling of perfect gas.

a) Entropy b) Temperature

c) Enthalpy d) Pressure

Q.9 Entropy change of mixing 2 liquid substances depends on _____.

a) Molar concentration b) Quantity (No. of Moles)

c) Both A & B d) None

Q.10 What is the activity of a catalyst when a time t=0?

a) Infinity b) Unity

c) Zero d) None

SECTION-B

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

Q.11 What is carnot cycle?

Q.12 Name any one reactor.

Q.13 Write one application of raoult's law.

Q.14 State first law of thermodynamics for open system.

Q.15 Write one effect of temperature on equilibrium constant.

Q.16 Write one difference between adiabatic and polytropic process.

Q.17 Write one variable affecting second order reaction.

Q.18 Write one application of dalton's law.

Q.19 Write one difference between isobaric and isothermal process.

Q.20 What is homogenous system?

SECTION-C

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

Q.21 What is the concept of amagat's law?

Q.22 Write effects of pressure on equilibrium constant.

Q.23 Derive the mathematical expression of Vanderwaal's equation of state

Q.24 Write any one method of determination of order of reaction.

Q25 Name the various forms of energy.

Q.26 What is carnot cycle efficiency?