

## **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 What is order of reaction? Describe the use of integral method to determine the order of reaction with the help of a suitable example.
- Q.24 Describe the construction and working of a continuous stirred tank reactor in detail with the help of a neat diagram.
- Q.25 Explain the vapour compression refrigeration cycle in detail along with its advantages and disadvantages.

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220531

**3rd Sem. / Chemical  
Subject : Chemical Thermodynamics &  
Reaction Engineering**

Time : 3 Hrs.

M.M. : 60

## **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 Which of the following is an example of closed system?
- car engine
  - liquid cooling system of a car
  - boiler in a steam power plant
  - air compressor
- Q.2 Le-Chatelier's principle applies to
- physical equilibrium
  - chemical equilibrium
  - all systems at equilibrium
  - none of these
- Q.3 Which of the following represents a thermodynamic process in which pressure remains constant?
- isobaric process
  - isometric process
  - isothermal process
  - adiabatic process

- Q.4 Which one of the following is a extensive property?
- a) surface tension      b) refractive index
  - c) internal energy      d) viscosity
- Q.5 Internal energy does not include
- a) nuclear energy
  - b) potential energy
  - c) energy due to gravitational pull
  - d) all of these
- Q.6 In a homogeneous chemical reaction, the rate of reaction can be affected by?
- a) temperature only      b) pressure only
  - c) composition only      d) all of these

### SECTION-B

**Note:** Objective/ Completion type questions. All questions are compulsory.  $(6 \times 1 = 6)$

- Q.7 What is S.I. unit of internal energy?
- Q.8 Define the semi-batch reactor?
- Q.9 Write the name of any one intensive property.
- Q.10 Define the conversion.
- Q.11 What is reversible reaction?
- Q.12 State the Boyle's law.

### SECTION-C

**Note:** Short answer type questions. Attempt any eight questions out of ten questions.  $(8 \times 4 = 32)$

- Q.13 What is difference between intensive properties & extensive properties?
- Q.14 Explain the effect of temperature on chemical equilibrium.
- Q.15 Discuss the different types of processes used in thermodynamics in brief.
- Q.16 Define the enthalpy. What is its significance?
- Q.17 Discuss the limitations of first law of thermodynamics.
- Q.18 State and explain zeroth's law of thermodynamics in brief.
- Q.19 Explain the concept and importance of half life period.
- Q.20 Describe heat engine and its efficiency in brief.
- Q.21 What is the difference between catalytic reaction and non-catalytic reaction?
- Q.22 Describe constant volume batch reactor in brief.