

### SECTION-D

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

- Q.23 Explain in detail construction and working of shell and tube heat condenser along with neat diagram. (CO3)
- Q.24 Discuss in detail forward feed, backward feed and mixed feed arrangement in evaporators. (CO4)
- Q.25 Write short notes on any two of following.
- a) Simple vertical boiler. (CO3)
  - b) Longitudinal and Transversal fin. (CO2)
  - c) Flow arrangement in heat exchanger. (CO1)

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### 5th Semester/Chemical Subject: Heat Transfer Operations-II

Time : 3 Hrs.

M.M. : 60

### SECTION-A

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

- Q.1 Primary purpose of a heat exchanger is (CO1)
- a) To generate electricity
  - b) To transfer heat between fluids
  - c) To compress gases
  - d) To change fluid pressure
- Q.2 Condensation occurs at constant: (CO3)
- a) Volume
  - b) Pressure
  - c) Temperature
  - d) Velocity
- Q.3 In water tube boiler, water flows through: (CO3)
- a) Outer shell
  - b) Furnace wall
  - c) Tubes
  - d) Drum only
- Q.4 The process occurring inside an evaporator is: (CO4)
- a) Condensation
  - b) Freezing
  - c) Filtration
  - d) Vaporization

- Q.5 Evaporator capacity is defined as: (CO4)
- Amount of vapour condensed per hour
  - Heat removed per unit area
  - Amount of water vaporized per hour
  - Total refrigerant flow rate
- Q.6 A domestic refrigerator uses which two heat exchangers? (CO1)
- Compressor and Fan
  - Condenser and Evaporator
  - Expansion valve and filter
  - Capillary tube and tray

### SECTION-B

- Note:** Objective/ Completion type questions. All questions are compulsory. (6x1=6)
- Q.7 Expand LMTD. (CO1)
- Q.8 Define fin Efficiency. (CO2)
- Q.9 Name any one water tube boiler. (CO3)
- Q.10 Define Evaporator Economy. (CO4)
- Q.11 Name any two commonly used coolants in condenser. (CO3)
- Q.12 In feed forward evaporator, steam and feed move in same direction. (True/False) (CO4)

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### SECTION-C

- Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)
- Q.13 Explain in brief working of Double pipe heat exchanger. (CO1)
- Q.14 Derive the expression of LMTD for Co-current flow. (CO1)
- Q.15 Explain in brief how fouling affect heat transfer rate in heat exchanger. (CO2)
- Q.16 Write short note on overall heat transfer coefficient. (CO2)
- Q.17 Discuss in brief Temp-Length curve for Evaporator. (CO4)
- Q.18 Explain in brief working of contact condenser. (CO3)
- Q.19 Differentiate between fire tube and water tube boiler. (CO3)
- Q.20 Discuss in brief the various factors which affect boiler selection. (CO3)
- Q.21 Explain in brief working of falling film evaporator. (CO4)
- Q.22 Explain in brief boiling curve with the help of neat diagram. (CO3)

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