

# **SNS COLLEGE OF TECHNOLOGY**

(An autonomous Institution) Accredited by NBA & NAAC with "A<sup>++</sup>" grade Sathy Main Road, Saravanampatti (po), Coimbatore -35



## 19MEB302 - Heat & Mass transfer

# **PUZZLES**

# **Puzzle 1: Match the Following**

## Column A

- 1. Fourier's Law
- 2. Stefan-Boltzmann Law
- 3. Prandtl Number
- 4. Heat Exchanger
- 5. Thermal Diffusivity

## Column B

- A. Governs conduction
- B. Radiative heat transfer
- C. Dimensionless parameter (ratio of momentum and thermal diffusivity)
- D. Transfers heat between fluids
- E. Alpha =  $k / (\rho Cp)$

(Answers: 1-A, 2-B, 3-C, 4-D, 5-E)

## **Puzzle 2: Word Scramble**

Unscramble the following words related to heat and mass transfer:

- 1. OINONCTEVC
- 2. TIRADAONI
- 3. TMEPRUEARET
- 4. ETRHNMAOYDCAI
- 5. CTADUCNOITN
- 6. CYLENECIFFI
- 7. RECVNOITYE

(Answers: 1. Convection, 2. Radiation, 3. Temperature, 4. Thermodynamics, 5. Conduction, 6. Efficiency, 7. Convective)

## **Puzzle 3: Fill in the Blanks**

- 1. \_\_\_\_\_ number is the ratio of inertial forces to viscous forces.
- 2. The energy required to change a substance from liquid to gas without a temperature change is called \_\_\_\_\_\_ heat.
- 3. The \_\_\_\_\_ law of thermodynamics states that energy cannot be created or destroyed.
- 4. The process of heat transfer by actual movement of particles is called \_\_\_\_\_\_.

(Answers: 1. Reynolds, 2. Latent, 3. First, 4. Convection)

## **Puzzle 4: True or False**

- 1. Conduction heat transfer occurs due to the movement of fluid particles.
- 2. The thermal conductivity of a material decreases as its temperature increases.
- 3. The Prandtl number is a dimensionless number in heat transfer.
- 4. Radiation requires a medium for heat transfer.
- 5. Latent heat is the heat energy required for a phase change.

#### Answers:

- 1. False
- 2. False (depends on material)
- 3. True
- 4. False
- 5. True

## Puzzle 5: Fill in the \Missing Word

- 1. In conduction, heat transfer is proportional to the \_\_\_\_\_ gradient.
- 2. Heat exchangers work on the principle of \_\_\_\_\_\_ energy transfer.
- 3. The unit of thermal conductivity is \_\_\_\_\_
- 4. \_\_\_\_\_ heat is the energy required to change the phase of a substance without a temperature change.
- 5. \_\_\_\_\_ law governs radiative heat transfer.

#### Answers:

- 1. Temperature
- 2. Thermal
- 3. W/mK
- 4. Latent
- 5. Stefan-Boltzmann

# **Puzzle 6: Identify the Process**

Match the heat transfer mechanism with the example:

## **Process Example**

- 1. Conduction | A. Heat transfer from the Sun to Earth
- 2. Convection | B. Heating a rod at one end, and the other end becoming hot
- 3. Radiation | C. Warm air rising near a radiator

#### Answers:

- 1 B
- 2 C
- 3 A