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Best Quality Classroom Topper Hand Written Notes to Crack GATE, IES, PSU's & Other Government Competitive/ Entrance Exams

MADE EASY
MECHANICAL ENGINEERING
Heat And Mass Transfer
By-Kakkar SIR

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

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PUBLICATIONS BOOKS -

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Heat Transfer

- Introduction to Heat Transfer
- Thermal conduction
  - → Basic of Thermal Conduction
  - → Steady state 1-D Thermal Conduction
    - ↳ Without heat Generation
    - ↳ With heat Generation
  - → Conduction through Extended Surfaces (Fins)
  - ↳ Unsteady-state Heat Conduction
- Thermal Radiation
  - → Basics of Radiation
  - → Solid angle Concept
  - → Shape factor Concept
  - → Radiative heat transfer
- Heat Exchanger (DEVICE) Application
- Thermal Convection
  - → forced Convection (External flow)
  - → forced Convection (Internal flow)
  - ↳ free (Natural Convection)

External flow

GATE:→ min 5 to 6 marks

ESE:→ Prelims : (15-20) Questions of HT

150 Questions

mains :- (60-70) marks out of 300

Text Books

1. R. C. Sachdeva
2. P. K. Nag

Ref. Book

1-Incropera & Dewitt } for Ref. only
2. Cengel

worksheet → Telegram (AMIT KAKKAR SPEAKS) (Sir)
↓
workbook
↓
GATE (PYQ)
↓
ESE
↓
Any Text Book

Thermodynamics:→

This course is dealing with thermodynamic system b/w two equilibrium states i.e. we are able to calculate the energy transfer in forms of Heat or work during the Process (change in equilibrium state)

But thermodynamics unable to tell about time consumed during the Process this is because thermodynamics is not dealing with mechanism of heat transfer.

Where mechanism of Heat transfer is clear then we can also calculate the time involved during the Process therefore "when the time associated in studys of energy transfer then we study Heat transfer course."

As well as this course helps in designing of different equipments like Refrigerator, air conditioner or any Heat Exchanger like boiler, condensor, Radiator, evaporator, Economisor to achieve a desire heat transfer rate under given temp. diffrent

• Introduction to heat transfer.

• Basic Cause of heat transfer :→

Basic cause of heat transfer existance of temperature different.

whenever the difference of temp. exist within the medium or between media, heat transfer takes place. It always takes place from High temp. to Low temperature

• Different mechanisms of heat transfer :→

Heat transfer takes place by three different mechanisms

(I) Thermal Conduction

(II) Thermal Convection

(III) Thermal Radiation

• Symbols in heat transfer →

Φ = Heat transfer ⇒ Unit = J

q = Rate of Heat transfer ⇒ unit = J/Sec (W)

q'' = Rate of Heat flux ⇒ unit = W/m^2

q → Total heat transfer Per Sec

q'' → Local Heat transfer Per Sec
(Rate of Heat transfer Per unit Area)