



GATE 2020
Mechanical Engineering
(Volume - I)

TOPIC WISE GATE SOLUTIONS
1987 - 2019



GATE ACADEMY PUBLICATIONS®

...The Mentor for Engineers

CONTENTS

S. No. Topics

1. Fluid Mechanics

1. Properties of Fluid
2. Pressure & Its Measurement
3. Hydrostatic Forces
4. Buoyancy & Floatation
5. Kinematics of Fluid
6. Dynamics of Fluid
7. Laminar & Turbulent Flow, Viscous Flow, Flow Through Pipes
8. Boundary Layer Theory
9. Hydraulic Machines

2. Thermodynamics

1. Thermodynamics System & Process
2. First Law of Thermodynamics
3. Second Law of Thermodynamics
4. Entropy
5. Availability & Irreversibility
6. Pure Substances
7. Steam Power Cycles
8. Gas Power Cycles
9. Internal Combustion Engine

3. Heat Transfer

1. Conduction
2. Fins & Unsteady Heat Transfer
3. Free & Forced Convection
4. Heat Exchanger
5. Radiation

4. Refrigeration & Air-Conditioning (RAC)

1. Vapour Refrigeration
2. Properties of Moist Air & Psychrometric Processes
3. Heat Pumps & Cycles

5. Mechanics of Materials

1. Stress & Strain
2. Complex Stress
3. Elastic Constants & Theory of Failure
4. Strain Energy & Thermal Stresses
5. Shear Force & Bending Moment Diagrams
6. Bending of Beam
7. Torsion of Shaft
8. Springs
9. Euler's Theory of Column
10. Thin Cylinder

6. Machine Design

1. Design Against Static Load (Theory of Failure)
2. Design Against Dynamic Load (Fatigue Strength & SN Diagram)
3. Gears
4. Bearings, Shaft & Keys
5. Clutches, Ropes & Belts
6. Brakes
7. Joints (Bolted, Riveted & Welded)
8. Power Screws & Springs

7. General Aptitude

1. Numerical Ability
2. Logical Reasoning
3. Verbal Ability