

Table of Content

0.0 How To...

- 0.1- How To Read Questions (Published by 06/04/2022)
- 0.2- How to Asses Spatial and Functional Relationships
- (Published by 05/23/2024)

1.0 Structures

1.1 Loads & Forces

(Published by 03/25/2022)

Dead & Live Loads, Forces Laws of Equilibrium Moment

- **1.1A** Sample Questions (Equilibrium & Moment)
- **1.1B** Sample Questions Continued (Equilibrium & Moment)
- 1.1C Axial Stress & Sample Questions

1.2 Shear & Moment Diagrams

(Published by 03/25/2022)

- 1.2A Deformation & Hooke's Law Stress & Strain Elasticity & Plasticity Stress/Strain Diagram
- 1.2B Modulus of Elasticity
 Ductility & Brittleness
 Tension & Compression
 Shear & Bending
- **1.2C** Shear & Moment Diagrams Sample Questions (Shear & Moment Diagrams)



1.3 Structural Systems & Earthquake Design

1.3A - Published by 04/07/2022

Structural Systems Shear Wall, Moment Frame and Braced Frame Tributary Area

1.3B - Published by 05/06/2022

Earthquakes
Inertial Forces and Acceleration
Period & Resonance
Damping
Ductility, Stiffness & Strength
Building System Design Considerations
Re-Entrant Corners
Structural Irregularities
Soft & Weak Story

1.3C - Published by 05/17/2022

Impacts of Earthquakes on Site Assessment Non-Structural Design Elements Under Seismic Loads

1.4 - Published by 11/11/2022

Overturning Moment Safety Factor

2.0 Environment & Sustainability

2.1A - Published by 6/9/2022

What is Sustainability
Sustainable Design Objectives
Global Warming & Green House Effect
Renewable Energy Sources
Geothermal Energy Systems
Wind Turbines

2.1B - Published 6/11/2022



The Basics
Embodied Energy
Heat, Sensible Heat, Latent Heat
Heat Flow
Thermal Resistance
R-Value, K-Value, U-Value, C-Value
Thermal Comfort
Psychometric Chart

2.2A - Published by 07/31/2022

Climate
Microclimate
Climate Regions of the US
General Design Strategies for Cold & Hot Climates

2.2B-Pt.1 - Published by 09/26/2022

Altitude /Azimuth Angles Latitude Reading Sun-Path Diagrams

2.2B-Pt.2 - Published by 10/04/2022

Daylighting Strategies
Thermal Properties of Windows
Surface Films and Low-E Coating
Window Design Strategies for Better Daylighting
Skylight Design Strategies for Better Daylighting

2.2C - Published by 12/03/2022

Passive Heating Systems

- Direct Gain
- Indirect Gain (Trombe Wall)
- Isolated Gain (Sun Space)
- Thermosiphoning

2.3 - Published by 01/03/2023

Shading



2.4 - Published by 01/28/2023

Passive Cooling

- How Does Air Flow?
- Natural Ventilation
- Stack Effects, Bernoulli Effect, Venturi Tube)
- High-Mass Cooling (Roof Ponds)
- Night Flushing
- Evaporative Cooling

3.0 Mechanical Systems

3.1 - Published by 6/29/2023

- Active Climate Control
- How to Select the HVAC System
- Thermal Zoning
- HVAC System Components
- Boilers
- Furnaces
- Refrigeration Cycle
- Heat Pumps

3.2 - Published by 7/21/2023

Air Delivery

- o Fans
- Air Handling Units
- Designing Ductwork

Water Delivery

- Pumps, Pipes
- Water Delivery Devices

Indoor Air Quality

- Dedicated Outdoor Air System (DOAS)
- Heat Recovery Ventilators (HRVs)
- Energy Recovery Ventilators (ERV)



3.3 - Published by 8/03/2023

- Small Buildings / Large Buildings
- Local Systems / Central Systems
- Small Building HVAC System Scenarios

3.4 - Published by 10/07/2023

Large Buildings HVAC System Scenarios

3.5 - Published by 10/16/2023

Mechanical Systems Bonus Quiz

4.0 Site Analysis

4.1 - Published by 12/01/2023

- Zoning
- FAR / Setback /Building Footprint/ Total Buildable Area Calculations
- Easement / Right of Way
- Variance
- Planned Urban Development

4.2 - Published by 12/08/2024

 Site Analysis & Design (Analyzing the Site and Placement of Buildings)

