

## ARCH 614. Study Guide for Quiz 5

This guide is not providing “answers” for the conceptual questions. It is a list of topical concepts and their application you should be familiar with. It is an *aid* to help prepare for the quiz.

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### Covers material of Lectures 9, 10, & 11

- Neutral axis, section modulus,  $Q$ , extreme fiber
- Maximum shear stress (& location along length and in cross section)
- Maximum shear stress by beam shape (proper equations)
- Shear flow and shear center
- Connected area
- Nail capacity and pitch for resisting longitudinal shear
- Statically Determinate vs. Indeterminate
- Restrained
- Continuous
- Inflection point
- Moment *redistribution* for statically indeterminate beams
- Theorem of Three Moments
- Continuous beams with pins
- Use of Beam Diagrams and Formulas
- Pinned arches and frames
- Rigid vs. non-rigid pinned frames
- Rigid frame behavior
- Free Body Diagram rule for force at a pin of a frame
- Connection types and load/moment transfer
- Types and purpose of bracing
- Stability
- Buckling
- Slenderness
- Critical Buckling and Euler's Formula
- Effective length,  $K$  & bracing
- Beam-Columns
- Combined bending and compression – *interaction*
- P- $\Delta$  effect
- Eccentricity
- Relative joint stiffness for determining effective length ( $\psi$ )
- Lateral buckling (and bracing)
- Lateral *torsional* buckling