

## ARCH 331. Study Guide for Quiz 6

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 19, 20, 21 & 22

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| <input type="checkbox"/> Constituents to make concrete   | <input type="checkbox"/> Concrete cover and purpose  |
| <input type="checkbox"/> Construction: cast-in-place, prestress, post-tension, ... & finishing/casting terms | <input type="checkbox"/> Clear span / span length  |
| <input type="checkbox"/> Behavior in compression vs. tension of concrete                                     | <input type="checkbox"/> #3 bar (meaning of the numeral)   |
| <input type="checkbox"/> Design methodology  | <input type="checkbox"/> Why bars need space between/around them   |
| <input type="checkbox"/> Load and Resistance Factor Design   | <input type="checkbox"/> Purpose of compression reinforcement  |
| <input type="checkbox"/> Working loads   | <input type="checkbox"/> T-section behavior and stresses in flange                                       |
| <input type="checkbox"/> Factored loads  | <input type="checkbox"/> Precast load tables   |
| <input type="checkbox"/> Resistance Factors  | <input type="checkbox"/> One-way slabs design and “unit” strip   |
| <input type="checkbox"/> “Design” values vs. “Capacity”  | <input type="checkbox"/> One-way shear vs. two-way shear (load & strength)                               |
| <input type="checkbox"/> Density of materials and relation to weight   | <input type="checkbox"/> Stirrup strength  |
| <input type="checkbox"/> Load types (and directions) ( <i>like D, L, S ...</i> )                             | <input type="checkbox"/> Location of maximum shear in beams  |
| <input type="checkbox"/> Load combinations   | <input type="checkbox"/> Why torsional shear stirrups are “closed”                                       |
| <input type="checkbox"/> Minimum Design Loads & Requirements   | <input type="checkbox"/> Torsional (shear) stress (and where maximum occurs)                             |
| <input type="checkbox"/> Serviceability and limits   | <input type="checkbox"/> Shear stress in round, rectangular, open and closed thin-walled sections        |
| <input type="checkbox"/> Creep   | <input type="checkbox"/> Development/embedment length  |
| <input type="checkbox"/> “composite”   | <input type="checkbox"/> I transformed, I-cracked, E as a function of weight and cracking                |
| <input type="checkbox"/> Transformed section   | <input type="checkbox"/> Minimum thicknesses for deflection control                                      |
| <input type="checkbox"/> Depth of the Whitney stress   | <input type="checkbox"/> Plate vs. Flat Slab   |
| <input type="checkbox"/> Moment capacity (or ultimate strength) vs. nominal moment (or strength)             | <input type="checkbox"/> Openings redistribute stress (or cause concentrations) and increase deflections |
| <input type="checkbox"/> Factored design moment (or shear or ....)   | <input type="checkbox"/> Openings should be reinforced for stresses and deflection control               |
| <input type="checkbox"/> Design stress in reinforcement  | <input type="checkbox"/> Continuous beam or slab analysis with coefficients                              |
| <input type="checkbox"/> Design stress in concrete (28-day)  | <input type="checkbox"/> Composite construction  |
| <input type="checkbox"/> Effective depth vs. depth of a beam   | <input type="checkbox"/> Space frame behavior  |
| <input type="checkbox"/> Reinforcement grades  | <input type="checkbox"/> Space frame supports and loads  |
| <input type="checkbox"/> Reinforcement ratio   | <input type="checkbox"/> Folded plate behavior   |
| <input type="checkbox"/> Under-reinforced vs. over-reinforced  | <input type="checkbox"/> Folded plate buckling and stiffness requirements                                |
| <input type="checkbox"/> Purpose of minimum reinforcement area requirement                                   | <input type="checkbox"/> Design vs. analysis   |
| <input type="checkbox"/> Why development length is necessary   | <input type="checkbox"/> $kl/r$ limit for concrete   |
| <input type="checkbox"/> Use of Strength Design Curves ( $R_n$ )   | <input type="checkbox"/> Effective column length for sway or non-sway frames                             |
| <input type="checkbox"/> Depth with respect to span length and shape   | <input type="checkbox"/> Columns with ties vs. spirals (stresses, factors, etc.)                         |
| <input type="checkbox"/> Purpose of stirrup requirement when concrete capacity is available                  | <input type="checkbox"/> Beam-columns and interaction diagram  |
| <input type="checkbox"/> Shrinkage   |  |
| <input type="checkbox"/> Cracks  |  |