
AGEN 151
Applied Hydraulics for Hydropower Generation
Spring 2021

Second Examination Study Guide

Prepared By

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- Know the two types of turbo-machines and understand the differences between them.
- Know the broad types of turbines and how these compare.
- Understand the approach followed for establishing power output from turbines given the flow rate (gpm) and the required total head (ft).
- Understand the differences among WHP, BHP, and actual power (electrical) generated from a turbine and how to calculate each.
- List the general types of flow measuring devices (those discussed in class) for closed pipes and open channels.
- Understand the effect of varying the hydraulic parameters on water flow conditions in open channels.
- Understand the difference between geodetic and plane surveying.
- Understand the importance and the basic requirements of good field notes.
- Know how to convert among different distance and angle measurements units.
- Understand the differences between blunders or mistakes, systematic errors, and random errors, and discuss a source of each type.
- Know the difference between precision and accuracy.
- Understand the accuracy ratio term and how it can be used.
- Understand how to work with map scale and how it can be used in location and layout surveys.
- Understand what is unique about topographic maps and how to interpret them.
- Know what contour lines correspond to and how these provide an idea of topography.
- Understand how to read contour lines.
- List and discuss the leveling methods covered in the class.
- Understand stationing, when is it used, and how to develop station labels.
- Know the different leveling equipment covered in class.
- Understand differential, profile, and cross-section leveling and when each is used.
- Understand the terms instrument set, BM, TBM, TP, BS, HI, FS, IS, note reductions, balancing of sights, closed circuit, closure error, and arithmetic check as well as when each is used in the development of proper surveying notes.
- Understand the steps involved in differential and profile leveling.
- List the common mistakes that can lead to errors when performing differential and profile leveling.
- Setup and reduce field notes for differential and profile leveling.
- List the two standard methods for measuring distances and the expected accuracy of each.
- List the purposes of taping accessories and explain the events that require the use of these accessories.
- List the jobs of the head and the rear tapepersons.
- List and discuss the procedure for proper distance measuring with a steel tape.
- Discuss "breaking tape" and other methods of measuring distances on steep slopes.
- Understand the common sources of taping errors and how to correct for them.