

me263 – Fluids and Heat Transfer

Final Exam – Review

The test will be:

- Duration: 3 hours
- Open Notes, Calculator, Formula Sheet
- An individual Effort (no 'teamwork')
- The style and focus of the questions will be similar to the assignment questions

Assignment 1

- Class I Series Pipelines: Determine the magnitude of the fluid's motive influence) – ON MIDTERM – **YES!** (EXPECT SOME GENERAL QUESTIONS ABOUT SERIES PIPELINE FLOW ON THE FINAL EXAM) -

Assignment 2

- Class II Flow Systems: Find flowrate – **NOT ON FINAL EXAM** -

Assignment 3

- Class III Flow Systems: Find inlet and discharge diameters, select an appropriate pump and ensure that the inlet to the pump will work properly using NPSH – ON MIDTERM – **NOT ON FINAL** -
- Parallel Flow Systems and Hardy Cross: 3 and more parallel paths – **NOT ON FINAL EXAM** -

Lab 2

- Parallel Flow analysis: 2 pipe parallel flow systems – **NOT ON FINAL EXAM** -

Assignment 4

- Ordinary Heat Transfer: Finding R, calculating heat transfer rate – **YES!** - EXPECT THIS SORT OF QUESTION -

Assignment 5

- Finned Cooling/Heating – ON MIDTERM – **NOT ON FINAL EXAM**
- Selecting an appropriate heat sink – **NOT ON FINAL EXAM**
- Special Case heat transfer (pipes in dirt, etc.) – **NOT ON FINAL EXAM**

Assignment 6

- Finding the convective heat transfer coefficient 'h'
 - Forced Convection – **YES!** - EXPECT THIS SORT OF QUESTION -
 - Natural Convection – **YES!** – EXPECT THIS SORT OF QUESTION -
- Transient heating and cooling
 - Heating with Constant Power Input – **YES!** – EXPECT THIS SORT OF QUESTION -
 - Cooling, insulated only with a fluid boundary layer – **YES!** – EXPECT THIS SORT OF QUESTION
 - Cooling, insulated with multiple layers of insulation – **NOT ON FINAL EXAM**

Assignment 7

- Designing a heat sink in combination with a heat transfer fluid flow system – **NOT ON FINAL EXAM**

Assignment 8

- Heat Exchangers
 - Finding U (and h's, R's etc.) – **YES!** – EXPECT THIS SORT OF QUESTION
 - Tube and Shell Heat Exchangers with Correction Factors – **YES!** – EXPECT THIS SORT OF QUESTION
 - Tube and Shell Heat Exchangers: NTU Method – **YES!** – EXPECT THIS SORT OF QUESTION
 - Tube and Shell Heat Exchangers: Catalog Selection – **NOT ON FINAL EXAM**

Assignment 9

- Bluff Bodies (will it tip over?) – **YES!** – EXPECT THIS SORT OF QUESTION -
- Forces due to fluids in motion – **NOT ON FINAL EXAM**
- Lifting Bodies: Lifting Forces and Drag Forces – **YES!** – EXPECT THIS SORT OF QUESTION -

Lab 3

- Finding the C_L and C_D of a paper airplane.