Final exam comments:

5 Zones: [# questions]

1. Warmup [2]
2. Linear Mechanics [9]
3. Rotational Mechanics [4]
4. Simple Harmonic Motion, Waves, and Sound [4]
5. Fluids and Heat [5]

~60% calculation questions

Exam questions will tell you…

- All needed constants (other than g and π)
- When an angle is in degrees or a quantity is in radians
- Equations for simple moments of inertia
- Any equations or numerical values you need that aren't on your formula sheet

Skills checklist: for your reference

- Interpret plots of kinematic quantities over time
- Perform 1D kinematics calculations
- Answer freefall and projectile motion questions
- Draw free body diagrams
- Calculate friction
- Solve multi-object problems
  - With no rotating objects
  - With one rotating object
- Calculate work done
- Conserve mechanical energy
  - With no rotating objects
  - With a rotating object
- Use the work-kinetic energy theorem
- Determine impulse
- Conserve momentum
- Determine torque
- Conserve angular momentum
- Relate the period of a pendulum to other quantities
- Determine unknown information about an oscillating mass on a spring
- Solve a resonance problem
- Solve a Doppler Effect problem
- Apply flow continuity
- Solve a problem with a floating object
- Determine v_{rms}
- Calculate thermal expansion
- Find the final temperature of a two-material system

Be prepared to deal with…

- Projectile motion
- Objects moving or at rest on flat surfaces with or without friction
- Objects on ramps with or without friction
- A system with one or two blocks that has a pulley
- A collision or explosion
- A balance beam
- Objects spinning together
- A vibrating pipe or string
- Pipes of changing radius
- A floating object
- Temperature changes