PART I

① Stretched Strings

* Interfaces between μ_1 & μ_2 (Reflection, Transmission
  Velocity change,
  Wave vector change)
* Energy (Kinetic/Potential) in different wave forms.
* Given initial conditions, find $\Psi(x,t)$ for all t.

② Coax Cables

* Interfaces between Z_1 & Z_2 (Reflection, transmission) etc.
* R_0 related to attenuation
* ϵ related to phase velocity

PART II

③ Infinite potential well

* Normalization
* Energy measurements (include projection onto an eigenfn)
* Expectation values $\langle x \rangle$, $\langle p \rangle$, $\langle E \rangle$
* Time evolution of wave fns and expectation values
* Recognize energy eigenfns vs superposition states
* Probability to find a particle in a certain region.

④ Free quantum particles

* Eigenstates of momentum, eigenstates of energy, superposition states
* Energy measurements, momentum measurements.

⑤ Bound states of arbitrary $U(x)$

* Qualitative features of energy eigenfunctions.

Both quantum and classical

⑥ Boundary conditions

* Understand why $\Psi_L = \Psi_R$ & $\frac{d\Psi_L}{dx} = \frac{d\Psi_R}{dx}$ at an interface.

  Know how to use.

⑦ Dispersive wave systems

* Understand difference between v_{phase} & v_{group}.

* Given $\omega(k)$, predict the propogation of wave packets and harmonic waves.

⑧ Derivations

* Questions that check you understand a HW derivation.