Problem 1: Consider the following scenarios:

![Floating Body](image1)
![Fixed Body](image2)

a) Identify all of the appropriate boundary conditions in each scenario.

b) Identify and explain the relevant types of wave potential in each scenario.

Problem 2: Given a two-dimensional barge alongside a pier as shown:

![Barge Adjacent to a Pier](image3)

a) Derive expressions for the heave and sway Froude-Krylov exciting force, taking into account the presence of the pier.

b) Find the wavelengths of the ambient waves for which the heave and sway Froude-Krylov exciting forces disappear.