Test paper 8 Dynamics of Ocean Structures

Tutorial for self assessment

1. State the essential characteristics of a dynamic loading
2. In how many ways, you can write equation of motion of a single degree-of-freedom model. Demonstrate them with an example
3. Define degree-of-freedom
4. What is the physical significance of structural characteristics like frequency and mode shape?
5. Should you agree that estimate of damping characteristics of a structure is a complex phenomenon, state why. If so, how are they estimated?
6. Derive an expression for response of a single degree-of-freedom which is undamped and set in free vibration
7. What is damping? How many types of damping exist? Explain their salient features. Which is the most commonly used damping model in ocean structures?
8. Derive an expression for logarithmic decrement of under-damped system, under free vibration
9. What do you understand by resonance, in terms of structural response behavior of offshore structures?
10. Why lumped mass is a popular model in dynamic analysis of offshore structures?