**Q1.** Consider Kanai-Tajimi spectrum with intensity . Ground frequency is rad/s and soil damping is . Assume value of and evaluate response spectrum for and damping. Using this response spectrum, evaluate the power spectrum of ground shaking and compare with the original one. Also simulate 100 samples of ground motion and find average response spectrum for 2% and 5% damping and compare with the one obtained above. Use time duration of 20s. Assume any other data required. (Coordinator: Sourav Das & Rex Alfred)

**Q2.** Consider the given 5DOF system. Generate a Gaussian white noise of intensity for a duration 600s. Evaluate the response of the structure due to this white noise as support motion. Apply Random Decrement Technique (RDT) and evaluate system parameters (). Perform Principle Component Analysis (PCA) on the data and find out and compare. Assume any data for this problem if required. (Coordinator: Manu Krishnan & Basuraj Bhowmik)

5DOF system property: 



**Q3.** Consider 5DOF system given above. The support motion is modeled by Kanai-Tajimi spectrum (assume ). Evaluate RMS value of top response and check the results with modal combination rules (i.e. SRSS & CQC). (Coordinator: Rohan Dharmadhikari & Diptojit Datta)