1. Static perturbation theories에서 weighting function을 사용하는 이유를 설명하시오. 또한 weighting function으로 adjoint flux를 사용하는 이유를 설명하시오. (15점)

2. Exact static reactivity increment에 대하여 다음 공식을 유도하시오. (20점)

(1) $\Delta\rho = \dfrac{(\Phi_0^*, [\lambda_0 \Delta F - \Delta M]\Phi)}{(\Phi_0^*, F\Phi)}$

(2) $\Delta\rho = \dfrac{(\Phi_0^*, [\lambda \Delta F - \Delta M]\Phi)}{(\Phi_0^*, F_0\Phi)}$

(3) $\Delta\rho = \dfrac{(\Phi^*, [\lambda_0 \Delta F - \Delta M]\Phi_0)}{(\Phi^*, F\Phi_0)}$

(4) $\Delta\rho = \dfrac{(\Phi^*, [\lambda \Delta F - \Delta M]\Phi_0)}{(\Phi^*, F_0\Phi)}$

3. Initially critical reactor에 대하여 exact point kinetics equations를 유도하시오.(20점)

4. Point Reactor Model에 대하여 설명하시오.(15점)

5. 다음의 delayed neutron source approximations에 대하여 설명하시오.(각 3점)
(1) six-delay-group kinetics
(2) two-delay-group kinetics
(3) one-delay-group kinetics ($\bar{\lambda}$ kinetics)
(4) precursor accumulation approximation
(5) constant delayed neutron source approximation
(6) prompt kinetics approximation; neglect of explicit delayed neutron source
(7) kinetics without delayed neutrons

6. 다음 각 항목에 대하여 간략하게 설명하시오.(각 3점)
(1) microkinetics
(2) prompt jump approximation
(3) prompt kinetics approximation