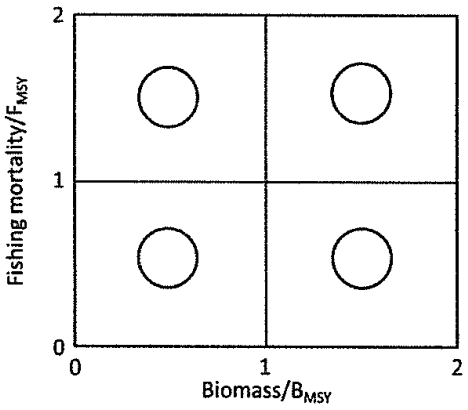
答案請填寫於試卷內，附上題號，並依序作答。可用英文或中文回答。

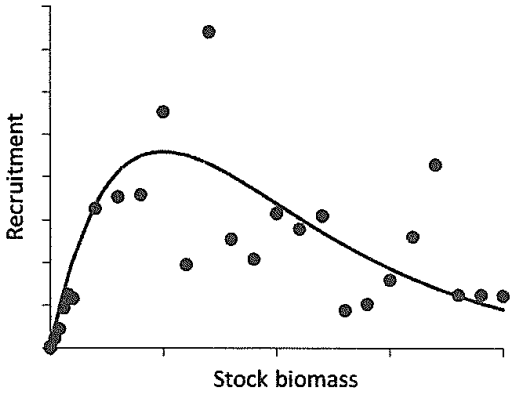
1. （20 分） The logistic population growth has been commonly used to describe the growth of a fish stock over time. Please explain what logistic population growth is and how it relates to the concept of Maximum Sustainable Yield.

2. （20 分） The Kobe plot describes statuses of four fish stocks. Please fill in the blank circles with the English letters of A-D. Among the four fish stocks, which one is in the rebuilding condition? Please explain why.



Stock A: Not-overfished but overfishing
Stock B: Not-overfished and not-overfishing
Stock C: Overfished and not-overfishing
Stock D: Overfished and overfishing

3. （20 分） The figure below shows the recruitment and stock biomass data (black circles) of a fish stock and a Ricker stock-recruitment curve. Please explain the definitions of "stock biomass" and "recruitment". Why does the recruitment data vary so largely given a fixed stock size? Please explain the biological mechanisms of why the recruitment reaches a maximum before decreasing at higher levels of stock biomass in the Ricker stock-recruitment curve.



4. （20 分） Please explain the difference between nominal catch-per-unit-effort (CPUE) and standardized CPUE and how to conduct the CPUE standardization.

5. （20 分） Please explain the concepts of growth overfishing and recruitment overfishing.

試題隨卷繳回