

1. If a population exhibits a stable age distribution:

- A) the proportional distribution of individuals among age classes remains constant
- B) each age class contains the same number of individuals
- C) the net reproductive rate  $R_0$  must be 1.0
- D) A & B are correct

2. Suppose the longevity of a cohort of newborns has a Type III survivorship curve. Then:

- A) low juvenile mortality is followed by high survival to reproduction
- B) survival is independent of age
- C) high juvenile mortality precedes high survival to reproduction
- D) none of the preceding is correct

3. Consider a population with  $k = 3$  age classes. At time  $t$  the age structure is:

$$\mathbf{n}(t) = \begin{bmatrix} n_1(t) = 80 \\ n_2(t) = 50 \\ n_3(t) = 17 \end{bmatrix}$$

Survival rates from age 0 to age  $x$  are:  $l(0) = 1$ ,  $l(1) = 0.5$ ,  $l(2) = 0.3$ , and  $l(3) = 0$ . What are the survival statistics  $P_i$  for the age classes  $i$ ;  $i = 1, 2, 3$ ? Given age-class fertilities  $F_1 = 1.0$  and  $F_2 = 1.1$ , find the age structure  $\mathbf{n}(t + 1)$ .

4. From your text, define reproductive value in no more than two sentences.