4			**In all parts ignore nos except 20, & 1020**			**BOD if describe growth rather than <u>rate</u> in (a) and (b)**	Condone muddle between *P* and growth of *P* in (a) and (b)
4	**(a)**		A: Growth (rate) increases, then decreases Grows slowly, then quickly, then slowly B: Growth (rate) decreases Grows quickly then slowly Both	**B1** **[1]**	**2.2b**	Allow increase, constant, then decrease or "levels off", "tails off", "plateaus" Allow "levels off", "tails off", "plateaus"	NOT "*P*" decreases, for A or B Ignore "exponentially"
4	**(b)**	**(i)**	A: *P* (decreases and) tends to 20 or (Decreases and) doesn't go below 20	**B1** **[1]**	**3.4**	Allow (Decrease and) reach 20, **Must mention 20** (as population, not years)	Ignore all else
4	**(b)**	**(ii)**	B: *P* tends to 1020 oe *P* doesn't exceed 1020	**B1** **[1]**	**3.4**	Growth is asymptotic around 1020 Settles at 1020. Saturates at 1020 Converges to 1020. Allow reaches 1020 Plateaus at 1020. Asymptote at 1020 **Must mention 1020**	NOT: Pop increases, but slowly Diverges to 1020 Tends to 1020, then down Ignore all else
4	**(c)**	**(i)**	A: Food (almost) runs out, or is used up oe or becomes very low or there will be a shortage oe or begins to run out	**B1** **[1]**	**3.5a**	or will only support a population of 20 Won't sustain large nos. Insufficient NB "Limited" allowed in c(ii), not c(i)	NOT: just Limited, Finite NOT: just "Decreases" Ignore all else
4	**(c)**	**(ii)**	B: Food sufficient to support a pop ≈ 1020 Enough to sustain equilibrium (or population) Barely enough, can't support increase in P Food limited so pop can't continue to grow	**B1** **[1]**	**3.5a**	Stays stable Sustainable Constant	Must imply at least two of: 1. Food won't run out <u>and</u> 2. Food limited or equilibrium 3. Can't support increase in *P* Ignore all else