Answers to examination-style questions

Answers	Marks	Examiner's tips
1 (a) *any **two** references to genetic and environmental factors*: aggression is polygenic/many genes/shows continuous variation; more aggressive inherit more alleles/genes for aggression; *OR* mutation; produces new gene/allele for aggression; *OR* independent assortment/crossing over/ random fertilisation; so new allele/gene combinations (for increased aggression); *OR* males can learn; from (previous fights with) other males; *OR* seasonal/variations in light levels; produces hormonal changes/increased male hormones; *OR* increased population density <u>of males</u>/ decreased food supply/fewer females; (*reject territory size*) causes increased aggression to secure resources;	**4 max**	Remember you are asked for 2 possible causes and you must explain them. As you can see, there are several ways of gaining full marks.
(b) **Figure 1** – the more aggressive the male, the larger his territory; **Figure 2** – the larger the territory, the more females mated with; so greater number of offspring likely/ <u>increased or more</u> reproductive success;	**3**	You could also answer this question using the data in the bar charts. Quite often a mark is given for getting the general idea of the question and giving a basic answer, e.g. the principle that more aggressive males have more partners gains 1 mark. This is the lowest acceptable answer that could be given a mark.
2 (a) fungi and animals;	**1**	
(b) (insects and fungi) have common ancestor; they diverged a long time ago/before others referred to in phylogenetic tree; prokaryotic species;	**2**	Questions which begin with 'suggest' require you to apply the information and your broad understanding of biology to explain an idea which you may not have met before. Do not panic because the question is unfamiliar.

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(c) those with similar sequences put in same groups/are more closely related; the greater difference in amino acid sequence the longer ago the groups diverged;	**2**	
(d) advantage – present in all (eukaryotic) species or organisms/quantifiable; disadvantage – extinct species not considered/no timing of events available/ only limited number of amino acid sequences/cannot include prokaryotic species;	**2**	
3 (a) reduced risk of predation;	**1**	
(b) principle of sequential multiplication ($0.9 \times 0.6 \times 0.75 \times 0.67$); 0.27;	**2**	Make sure you start at the right place in the sequence of events . Start at 'orient to female' and finish at 'attempt to mate'. The probability of each event is multiplied together to give the final probability.
(c) (i) similar sequence/actions/sign stimuli;	**1**	
(ii) additional action in sequence (species A)/scissor wings blocks sequence in B;	**1**	
(d) (acts as) sign stimulus; responds only to species-specific sound;	**2**	