

4(a)	1 diploid ; 2 allele ; 3 dominant (allele) ;
4(b)	any four from: 1 CDV acts as a selection pressure ; 2 DNA / allele, for black (coat) gives <u>resistance</u> to CDV - or 2 DNA / allele, for black (coat), gives (selective) advantage / is selected for, if / when, CDV is common / dogs are common ; <i>in the south (context must be established at least once):</i> 3 more CDV (infection) in <u>wolves</u> ; 4 black wolves, more likely to survive / have selective advantage / are selected <u>for</u> ; ORA greys 5 black wolves more likely to, breed / reproduce ; ORA greys 6 pass on / increase the frequency of, <u>allele</u> for black coat ; ORA grey
4(c)	1 positive (linear) correlation / positive relationship / direct relationship / directly proportional - or - as % with (anti-CDV) antibodies increases the % of black wolves increases ; plus any three from: 2 wolves that survive CDV will, later / as a result, have antibodies ; 3 high % of antibodies show population with high level of CDV ; 4 in population with high % antibodies, grey wolves have died / more black wolves are left ; 5 gene / DNA / allele / protein, that gives black coat, helps survival / gives resistance to CDV / defends against CDV ; 6 AVP ;

4(a)	1 mutation ; 2 horizontal transmission / conjugation / transformation / transduction ;
4(b)	<i>idea of tracking</i>, mutations / resistance genes / resistance alleles or identifies mechanisms of resistance or (informed) choice / production, of antibiotic ;
4(c)	any three from: 1 streptomycin is selection pressure ; 2 bacteria with, mutation / resistance, survive / reproduce / have a selective advantage ; ora 3 allele / gene, for resistance passed on ; 4 directional selection ;

5(a)(i)	<u>directional</u> (selection) ;
5(a)(ii)	curve with starting point (on x-axis), peak and end point (on x-axis) all to the right of the original positions ;
5(b)	any four from: 1 disruptive / diversifying (selection) ; 2 selection pressure is, seed / food (availability / size) ; 3 competition for, food / seeds ; 4 (birds with) intermediate bills cannot eat small and large seeds ; 5 extreme / small and large, phenotypes / bills, more likely to survive / have selective advantage / selected for ; 6 correct description of change in allele frequency ;
5(c)(i)	$r / 0.930$ / calculated value, is greater than critical value for $n = 5$; at (probability level) 0.05 ;
5(c)(ii)	any four from: <i>invasive alien species / they, may:</i> 1 change / disrupt, food, chains / webs ; 2 compete for food with / feed on same food as / occupy same niche as, <u>native</u>, species / organisms ; 3 prey on / graze / eat, <u>native</u>, species / organisms ; 4 introduce (new), disease / parasites ; 5 change / damage, the habitat ; 6 be toxic / threaten human health ; 7 damage, tourism / agriculture ;
5(c)(iii)	any two from: 1 climate change ; 2 hunting by humans ; 3 degradation / loss, of habitat ; 4 (named) pollution ; 5 disease ; 6 (named) natural disasters ;