

Question 22 (Answer: B)

- Bacteria with a resistance allele survive treatment while the others die.
- They reproduce, so the resistant proportion of infections rises.
- The graph therefore tracks natural selection in favour of the resistant strain.

2(a)(i)	428 (%) ;;;
2(a)(ii)	<i>any two from:</i> 1 (chickens) can produce eggs, sooner / at an earlier age / younger / AW ; ora 2 chicken reach, saleable size / have (more) meat, sooner / at an earlier age / younger / AW ; ora 3 (chickens) can produce, chickens / chicks / offspring, sooner / at an earlier age / younger / AW ; ora 4 increased / AW, profit ; ora 5 AVP ;
2(a)(iii)	1 breed / cross, chickens with the large(st) body mass together ; 2 select offspring with the large(st) body mass to breed together ; 3 (this process is) repeated for (many) generations ; 4 AVP ;

2(b)	<i>any six from:</i> 1 run-off / washed into freshwater / AW ; 2 chicken manure contains (increased availability of), nitrate / (mineral) ions ; 3 eutrophication ; 4 increased / rapid, growth of, producers / AW ; 5 increased <u>decomposition</u> of dead, producers / AW ; 6 increased <u>aerobic</u> respiration by (decomposers) ; 7 (increased respiration causes a) reduction in (dissolved) oxygen (in water) ; 8 death / migration / AW, of, (named aquatic) organisms requiring (dissolved) oxygen ; 9 AVP ;;
2(c)	<i>any three from:</i> deamination ; of excess amino acids ; (deamination) in the liver ; the removal of the nitrogen-containing part (of the amino acid) ;

Question 33 (Answer: D)

- Artificial selection is carried out by humans choosing which organisms breed.
- Natural selection happens without human involvement, driven by the environment.
- So a high-milk-yield cow is artificial selection *with* humans involved.

Question 27 (Answer: D)

- Antibiotics kill the non-resistant bacteria but leave the resistant ones alive.
- Those survivors reproduce, so the resistant proportion of the population rises.
- Widespread antibiotic use is what selects for resistance – the bacteria do not become resistant *because* of it.

Question 33 (Answer: C)

- Both kinds of selection act on existing genetic variation and both change the characteristics of a population.
- The difference is who does the selecting.
- In artificial selection *humans* choose which individuals breed; in natural selection the environment does.

Question 35 (Answer: B)

- A few bacteria already carry a resistance allele, by chance mutation.
- When the antibiotic is used, the non-resistant ones die and the resistant ones survive.
- The survivors reproduce, so the resistant *percentage* of the population climbs.