AQA Combined Science GCSE Trilogy

Biology Paper 2 AO1 Questions

Homeostasis & Response

1. What is homeostasis?
2. Suggest 3 internal conditions the body needs to maintain at optimal levels.
3. What is a receptor? Can you give an example?
4. Name 3 coordination centres in the body.
5. Name 2 types of effector.
6. How does information pass along a neurone?
7. Fill in the blanks: stimulus -> _____ -> coordinator -> _____ -> _____
8. How does information cross a synapse?
9. What is the coordinator for a reflex action?
10. What is a hormone?
11. How is a hormone transported to where it is needed?
12. Name 7 glands that produce hormones.
13. Draw a diagram to show the locations of these 7 hormones.
14. What happens in the body if blood glucose concentration becomes too high?
15. What are the differences between Type 1 and Type 2 diabetes?
16. What are the treatments for Type 1 and Type 2 diabetes?
17. What happens in the body if blood glucose concentration drops too low?
18. Where is oestrogen produced?
19. What is ovulation?
20. How long is a typical menstrual cycle?
21. Where is testosterone produced and what is its main reproductive function?
22. Name the hormones involved in the menstrual cycle and state their functions.
23. Name the barrier methods of contraception.
24. How does an intrautertine device prevent conception?
25. How does the contraceptive implant prevent conception?
26. Which hormones may be given to a woman as a fertility drug to improve her chances of conceiving?
27. Describe the stages involved in IVF treatment.
28. Where is adrenaline produced and what is its function in times of fear or stress?
29. Where is thyroxine produced and what is its function?

Inheritance, Variation & Evolution

1. What is meiosis?
2. Which cells are the gametes in animals and plants?
3. What are the differences between sexual and asexual reproduction?
4. How does meiosis affect the number of chromosomes in the production of gametes?
5. How many cell divisions take place during meiosis to produce gametes?
6. How do embryo cells divide?
7. Describe the structure of DNA
8. What is a gene?
9. What does a single gene code the information for?
10. What are the potential medical benefits of having the entire human genome mapped?

11. Write a paragraph that contains the following terms: gene, allele, dominant, recessive, homozygous, heterozygous, genotype, phenotype.
12. What is polydactyly and what causes it?
13. What is cystic fibrosis and what causes it?
14. How many pairs of chromosomes are contained in the nucleus of an ordinary human body cell?
15. What arrangement of sex chromosomes (X and Y) occur in:
    a. Males
    b. Females
16. What causes variation across the individuals in a population?
17. What is evolution?
18. Who defined the theory of evolution by natural selection?
19. What is natural selection?
20. Describe the process of speciation.
21. What is selective breeding?
22. Give examples of species that humans have selectively bred and the traits that occur as a result.
23. What benefits have been gained through selective breeding in agriculture?
24. What are the differences between selective breeding and genetic engineering?
25. What are the benefits of genetic engineering in plant crops?
26. How have bacterial cells been genetic engineered for benefits in medical treatments?
27. Describe the process of genetic engineering at the cellular level.
28. What are GM crops?
29. What are the potential benefits and risks of developing GM crops?
30. What are the main pieces of supporting evidence for the theory of evolution?
31. What is a fossil?
32. How is a fossil formed?
33. Why aren't scientists 100% of how life began on Earth?
34. What is meant by the extinction of a species?
35. Describe the process that leads to a strain of bacteria emerging that is resistant to antibiotics.
36. What steps can be taken to reduce the emergent of antibiotic resistant strains of bacteria?
37. Describe the structure of the Linnaeus classification system of living organisms.
38. What are the 3 domains present in the 3 domain system developed by Carl Woese?
39. What is an evolutionary tree?

Ecology

1. What factors might organisms compete for in an ecosystem?
2. What adaptations does a polar bear have that help it survive in its environment?
3. Give examples of abiotic factors that may affect plant survival in an ecosystem.
4. Which abiotic factor would be critical for animal survival, but not necessary for plants?
5. What is interdependence?
6. Suggest biotic factors that could affect the survival of rabbits in a woodland habitat.
7. What is an extremophile?
8. Suggest a foodchain for a marine ecosystem.
9. Suggest a foodchain for a woodland ecosystem.
10. In each of your food chains, identify:
    a. The producer
    b. The consumers
    c. The top predators

11. What does the direction of the arrow in a food chain signify?
12. What are the processes involved in living things recycling carbon in the environment in the carbon cycle?
13. What role do microorganisms play in the carbon cycle?
14. Describe the water cycle.
15. What is biodiversity?
16. Why is biodiversity important?
17. List the ways in which human activity pollutes the:
    a. Water
    b. Air
    c. Land
18. What are the environmental drawbacks of destroying peat bogs?
19. Why are humans clearing such large areas of rainforest?
20. What causes global warming?
21. What are the potential consequences of unchecked global warming?
22. What actions have humans taken to reduce the impact of humanity on the environment?

Practical Knowledge Needed:

- How can you measure human reaction time?
- Plan an investigation to see the effect of energy drinks on reaction time.
- How would you use a line transect to investigate the distribution of a plant species on a hillside?
- How would you use a quadrat to calculate the abundance of a particular plant species in a field?

Maths Skills Needed:

- Can you plot a line graph?
- Can you plot a bar graph?
- Can you draw a line of best fit?
- Can you draw a curve of best fit?
- Can you use a scatter diagram to spot a correlation between two variables?
- Can you calculate a mean?
- Can you calculate a median?
- What is the mean of the following 5 values: 0.4, 0.7, 0.5, 0.5, 0.6
- What is the median of the following 10 values: 0.4, 0.7, 0.5, 0.5, 0.6, 0.8, 0.4, 0.5, 0.5, 0.3
- What is the mode of the following 10 values: 0.4, 0.7, 0.5, 0.5, 0.6, 0.8, 0.4, 0.5, 0.5, 0.3