

1. Which famous scientist was asked if he would stand as president of Israel?
2. What is NAO in meteorological terms?
3. In Biology, what is meant by $Q_{10} = 2$?
4. Name one dominant genetic disorder.
5. Give the values of the following units:
(a) pico (b) nano (c) femto
6. In biological sciences, what are the following people known for:
(a) Niko Tinbergen, (b) Ivan Petrovich Pavlov, (c) Karl von Frisch
(d) Konrad Lorenz
7. What is 'Gaia'?
8. In chemical and physical science what are the following people known for:
(a) Mendeleev (b) Bohr (c) Leo Baekeland (d) Louis de Broglie
9. What value and unit does each of the following have:
(a) Planck's constant (b) Avogadro's number [N_A]
(c) wavelength of the visible spectrum?
10. In recent genetic research ANDi the monkey was created. What does this acronym [his name] stand for?
11. On what date during 2000 was the first draft of the human genome released?
12. In 1677 a Dutch merchant and amateur inventor created the first microscope. What was his name?
13. Who, in 1890, gave the first full completely correct description of meiosis?
14. Give the exact date that Darwin's *On the Origin of Species* was published.
15. In what year did Gregor Mendel start his hybridisation experiments with *Pisum sativum*?

16. In what year was the first paper published describing 'double fertilisation' in flowering plants?
17. What is 'apomixis'?
18. Which British scientist coined the term 'genetics' early in the twentieth century?
19. What is a 'proteome'?
20. In what year did Albert Einstein publish his general theory of relativity?
21. Who developed the four-cycle internal combustion engine in 1877?
22. Fluorine was isolated by in 1886.
23. In what year did Michael Faraday discover electromagnetic induction?
24. What was the title of the book published by Isaac Newton in 1687 describing his theory of gravitation and laws of motion?
25. Euclid published the *Elements* in?

The underlined section must appear in the answer for the point(s) to be awarded.

1. Albert Einstein
2. NAO = The North Atlantic version of El Nino
3. An increase of 10°C in temperature should result in the rate of reaction doubling.
4. Any correct example e.g. Huntington's chorea.
5. (a) 10⁻¹² (b) 10⁻⁹ (c) 10⁻¹⁵
6. They were all famous ethologists. NT, KL + KvF were awarded the Nobel Prize for Physiology and Medicine in 1973 for their unified, evolutionary theory of animal and human behaviour.
(a) Tinbergen: Worked with stickleback fish, herring gulls and digger wasps. He also published the Theory of Instincts in 1952.
(b) Pavlov: Nobel Prize in 1904 for conditioned reflex and the development of reflex theory of behaviour; cf. Pavlov's dog
(c) von Frisch: Studied the behaviour of bees, interpreting their dances depicting the source (direction and distance) of food.
(d) Lorenz: Developed the imprinting theory of a human raising birds, in particular Greylag geese. He studied the social dynamics of a flock of Greylag geese.
7. Gaia: The theory proposed by JE Lovelock in 1979 concerning the role of the biota in maintaining a climatic homeostasis.
8. (a) Mendeleev: Developed the Periodic Table of Elements in 1869
Neils Bohr: Modelled an atom in conjunction with Rutherford; in 1913 introduced the quantized energy level theory of the atom.
Leo Baekeland: Invented bakelite, the first plastic in 1908.
Louis de Broglie: Suggested that particles such as the electron can display wavelike behaviour in 1923
9. (a) 6.626 x 10⁻³⁴ Js (b) 6.02252 x 10²³ mol⁻¹ (c) 390 - 780 nm
10. inserted DNA
11. 26th of June

12. Anton von Leeuwenhoek
13. Oskar Hertwig
14. 24th of November, 1859
15. 1856 (12th March: Gregor's Day)
16. August 1898 by a Russian and again in 1899 by a Frenchman.
17. Parthenogenesis in plants.
18. William Bateson
19. The complete version of the proteins (cf. genome to full complement of genes).
20. 1916
21. Nikolaus Otto
22. Henri Moissan
23. 1831
24. Principia Mathematica
25. circa 300BC

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