

1ª Questão:

Valor : 3,5

TRADUZA

Isaac Newton (1642-1727)

A.P. French

Massachusetts Institute of Technology

When one considers all that Newton achieved, and the cultural and scientific environment in which he achieved it, there is reason to regard him as the greatest scientist and perhaps the greatest genius who has ever lived.

Despite the godlike status that some have tried to ascribe to him, he was of course a fallible human being. He groped and fumbled, as all scientists do, in approaching a new problem; he even fudged things a bit sometimes in trying to reconcile theory with observation. But the extent and profundity of his discoveries remain without parallel.

This would not have been predictable from his beginnings as a somewhat unloved child growing up in the English countryside, though he did demonstrate practical ingenuity and a probing curiosity, and was a good enough student to be admitted to Cambridge University. It was there that the real Newton emerged, with astonishing suddenness, as he approached the end of his undergraduate career. This young man, still an undergraduate, devoured most of what was then known in mathematics and began making his own original contributions. His physics began at about the same time with investigations into optics, and through a succession of controlled experiments he built up a picture of what light is and how it behaves. Here his powers as an experimentalist revealed themselves the brilliantly analytical mind behind the experiments that it devised.

2ª Questão:

Valor : 3,5

TRADUZA

Shuttle crew performs 81 microgravity tests

Richard Seltzer

During the just concluded flight of space shuttle *Columbia*, astronauts Leroy Chiao and Donald A. Thomas performed experiments in the pressurized International Microgravity Laboratory-2 (IML-2) module. Chiao, 33, who holds a Ph.D. in chemical engineering, used a centrifuge, while Thomas, 39, who has a doctorate in materials science, prepared samples in a glovebox. *Columbia* spent almost 15 days in Earth's orbit, surpassing the previous longevity record for space shuttle flights by about 18 hours. The seven-member international crew, which included a female Japanese physician, carried out 81 experiments on the effects of microgravity - about half in materials science and half in life sciences - designed by some 200 scientists from 13 nations. While still too early for even preliminary results, the National Aeronautics & Space Administration calls it a "very successful mission." Technical glitches meant not all runs could be made for a few experiments, but only one experiment had to be scratched completely: an examination of electrohydrodynamic effects in a suspension of latex particles using continuous-flow electrophoresis. IML-2 also carried a menagerie that included newts, fish, slime mold, jellyfish, sea urchins, fruit flies, frog eggs, and other unicellular and multicellular organisms to test how living organisms react and adapt to reduced gravity. Media headlines focused on the death of two newts, but NASA says no experiments were spoiled or lost as a result.

August, 1994, C&EN, p.7

3ª Questão:

Valor : 3,0

LEIA O TEXTO

In 1963 concern began to be expressed about the nitrate and nitrite widely used to give a pink color to sweet-cure bacon, to prevent certain semi-hard cheeses from turning sour, and to block the growth of lethal micro-organisms in canned meat. Alone, these chemicals are dangerous only in vast overdoses, but if they are combined - in food itself, or in the human stomach - with secondary amines such as are known to exist in fish products, cereals, tea, and tobacco smoke, they produce nitrosamines which have been shown to cause tumors in laboratory animals. Limiting recommendations have been made, but no ban imposed.

UTILIZANDO UNICAMENTE AS INFORMAÇÕES CONTIDAS NO TEXTO ANTERIOR, ASSINALE COM UM "X" A ÚNICA OPÇÃO CORRETA DE CADA ITEM.

a. In 1963

- (A) the use of nitrate and nitrite in foods increased.
- (B) sweet-cure bacon began to be colored pink.
- (C) the effects of some dangerous chemicals were tested.
- (D) public anxiety was shown over certain food additives.

3ª Questão:

(Continuação)

b. Some forms of nitrite and nitrate were used

- (A) to sweet-cure bacon.
- (B) to prolong the life of semi-hard cheeses.
- (C) to slow down the growth of micro-organisms.
- (D) to can meat.

c. According to the passage certain chemical which are added to food are probably safe

- (A) when taken in moderation, with other chemicals.
- (B) when taken alone in moderation.
- (C) when taken together with secondary amines.
- (D) when taken in significant quantities.

3^a Questão:

(Continuação)

d. Nitrosamines

(A) are produced by combining with certain chemicals.

(B) can be produced in the human stomach.

(C) exist in such things as fish products.

(D) produce tumors in smokers.

e. It might be inferred that a ban on nitrates and nitrites should be imposed because

(A) limiting recommendations do not work.

(B) they are always injurious to health.

(C) they are always harmful to laboratory animals.

(D) they could have side-effects on humans.

f. The most appropriate title for the passage is:

(A) Healthy eating in today's world.

(B) Food additives pose threat to health.

(C) Dangerous chemicals should be banned.

(D) Why nitrosamines should be banned.