

اسم: _____
رقم: _____

مسابقة في الثقافة العلمية - مادة الكيمياء
المدة: ساعة واحدة

This Exam Includes **Two Exercises**. It Is Inscribed On Two Pages Numbered **1** and **2**.
Use Of a Non-programmable Calculator Is Allowed.

Answer the Two Following Exercises:

First Exercise (10 points)
A Label of a Food Product

The information below represents the label of a food product.

<p>Little, crispy and special breads Ingredients: Cereal 92 % (wheat-flower, wheat-germs) – Vegetable fatty matter – Yeast – Sugar – Lactose and proteins of milk – Barley malt – Salt – Emulsifying agent: soya lecithin – Aroma – Peanut – Egg. Will be conserved in a dry and fresh place. Will be preferably consumed the date that indicated on the side of the box. Net weight: 475 g</p>	Average nutritional value for 100 g	
	Energetic value: 415 kcal – ... kJ.	
	Proteins	10.0 g
	Carbohydrates.....	70.0 g
 sugar	6.4 g
 starch	63.6 g
	Lipids	10.0 g
 Saturated.....	4.7 g
	Food fibres.....	4.3 g
	Sodium.....	0.36 g

Given: Energy value for 1 g of nutrient:

- Carbohydrates: 17 kJ ;
- Lipids: 38 kJ ;
- Proteins: 17 kJ;
- Fibers: 0 kJ;
- Sodium: 0 kJ.

Questions:

- 1- Give the name of the mineral and the names of the organic nutrients involved in the composition of this food.
- 2- Indicate the difference in structure between the saturated and unsaturated lipids.
- 3- The label includes two food additives: emulsifying agent and aroma.
 - a) Specify the role of an emulsifying agent.
 - b) Give two other food additives and specify the role of each.
- 4- Determine the mass of unsaturated lipids in 100 g of this food. Deduce the percent mass composition of saturated and unsaturated lipids in this food.
- 5- Calculate, in kJ, the energy value of 100 g of this food. Deduce, in Joule, the equivalent value of a calorie.

Second Exercise (10 points) Antibiotics and Vitamin Deficiency

Antibiotics destroy the intestinal flora which is not reconstituted until several months after end of treatment. If antibiotics are taken 2 or 3 times a year, the flora colon will be permanently disturbed. The flora colon synthesize the vitamins B 12 and K. Taking antibiotics represents a risk for the bones (osteoporoses) because the vitamin K fixes the calcium on the bones. In addition to that, it is the open gate for many inflammatory diseases and vaginal mycosis.

What should be done?

- The flora should be reconstituted after an antibiotic treatment, by taking pro-biotic ferment (yeast). The Laban is completely insufficient at this stage (phase), but it is still useful in the framework of a normal consumption all over the year.
- Avoid taking milk products with antibiotics: Milk limits the absorption of different antibiotics.
- In case of taking minerals supplement, it is much good to take minerals at a different schedule, because many mineral salts form an insoluble complex with some antibiotics, which could reduce its absorption from 50 to 90 %.
- Verify that you have really need to take these treatments (by antibiotics). If these needs will be repeated, your immunity system may be weak and it will be treat this system in order to prevent to be ill.

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Questions:

- 1- Referring on the passage, answer the following questions:
 - a) Explain why intestinal flora must be reconstituted after an antibiotic treatment.
 - b) In the passage is recommended to avoid the taking of milky products with the antibiotics. Justify why the Laban still useful in the framework of a normal consumption belong the year.
 - c) A physician prescribes an antibiotic for a patient, that suffers osteoporoses disease and he follows a regular treatment by calcium, The physician advices the patient that do not take the antibiotic and the calcium at the same hour. Justify.
 - d) In which case it is needed to repeat the treatment by the antibiotics?
- 2- Classify the two vitamins that indicated in the passage as lipsoluble and hydrosoluble. Give the meaning of these two terms.
- 3- Chose the good answer. The function of vitamin B 12 in the organism is:
 - a) To come in the formation of red blood cells.
 - b) To fix the calcium on the bones.
- 4- State the two classes of antibiotics and the corresponding functions.