

المادة: الكيمياء الشهادة: الثانوية العامة فرع: الاجتماع والاقتصاد/ الآداب والانسانيات نموذج رقم - 3 - المدة : ساعة واحدة	الهيئة الأكاديمية المشتركة قسم: العلوم	 المركز التربوي للبحوث والإنماء
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نموذج مسابقة (يراعي تعليق الدروس والتوصيف المعدل للعام الدراسي 2016-2017 حتى صدور المناهج المطورة)

This exam includes two exercises. The use of a non- programmable calculator is allowed. Answer the following two exercises:

Exercise 1 (10 points)

The Benefits of Almond Milk

Almond milk is one of the best foods for losing weight. One of the main characteristics of almond milk is that it contains no gluten, lactose or cholesterol. Despite this, it has the same consistency as cow's milk, so you can use it the same way.

Almond milk also contains vitamins A, B₂, D and E. Vitamin B₂ helps nails and hairs grow stronger and also helps skin being better hydrated. In addition, Vitamin E, founded in a cup of almond milk, recovers 50% of the daily requirements. This vitamin is also an excellent natural antioxidant that helps prevent cancer and delays the aging process.

Almond Milk is rich in protein, omega-6, zinc, calcium, iron, magnesium and potassium.

Almond milk contains a high percentage of soluble and insoluble natural fibers. In this way, it protects the walls of the intestines, helps to regulate sugar absorption by the body and control the cholesterol levels.

Without adding sugar, almond milk contains only 30 calories per cup.

Translated from « Améliore ta Santé »

Nutrient	Energy value for 1 g
Carbohydrate	3750 cal.

Document-1

Questions:

1. Referring to **the text**, answer the following questions:

1.1 Indicate the benefit of almond milk for people who have brittle nails.

1.2 Pick out one of the main characteristics of almond milk.

2. Vitamin E is a natural antioxidant. Give another natural anti oxidant.

3. Classify the vitamins in almond milk into hydrosoluble and liposoluble vitamins.

4. Calculate the energy value of a cup of almond milk containing 50 mg of sugar.

5. If a person adopts a diet rich in milk. Determine the required number of cups of almond milk which are necessary to meet the daily needs of vitamin E.

6. Justify whether the almond milk can be used as a good alternative to cow's milk for people suffering from lactose intolerance.

7. Specify whether the following statements are true or false.

7.1 Cholesterol is found only in food constituents of animal origin.

7.2 Calcium, potassium and magnesium minerals presented in almond milk are macrominerals since their daily needs is less than 20 mg.

7.3 Fiber is not a nutrient for humans because it is not digested.

Exercise 2 (10 points)

AUGMENTIN - Indications, dosage and side effects

Augmentin® contains a combination of two active ingredients amoxicillin and clavulanic acid. Amoxicillin is an antibiotic in a group of drugs called penicillins. Augmentin is used to treat many different infections caused by bacteria. This drug is sold as an over the counter drug in pharmacies in different formulations that are adequate for adults, children and infants.

Indications (Prescription):

Augmentin is prescribed for people having bacterial infections and when germs are resistant to other antibiotics. It can be used in sinusitis, pneumonia, ear infections, bronchitis, urinary tract infections, and infections of the skin and musculoskeletal (involving the bones and joints). It is also prescribed to prevent post-operative infections (after surgery) where it is administered by injection.

Contraindications:

This drug should not be used in case of having an allergy to any of its components, or to beta- lactam antibiotics which include penicillin and cephalosporin. It should not be used during hepatic impairment related to the combination of amoxicillin and clavulanic acid. If an allergic reaction occurs, Augmentin should be discontinued and an adapted treatment should be implemented.

Side effects:

Augmentin may cause digestive disorders (nausea , vomiting, diarrhea , abdominal pain), allergic reactions, respiratory disorders and rash (bumps).

This drug contains 12.27 mg of potassium per tablet by taken into account the persons who follow a low potassium diet.

Translated from: «Santé-médecine »

Posology:

- Adult Augmentin box of 16 film-coated tablets.
- 500 mg /62.5 mg Tablets: Each film-coated tablet contains 500 mg of amoxicillin and 62.5mg of clavulanic acid.
- For adults and children (masse \geq 40 kg), a total daily dose of 2000 mg of amoxicillin and 250 mg of clavulanic acid is prescribed, divided into two daily doses.

Translated from: http://www.doctissimo.fr/medicament-augmentin_adulte.htm

Document-1

Questions

1. Referring to the text:

- 1.1 Give the two active ingredients of Augmentin.
- 1.2 Indicate the effect of the presence of these active ingredients in Augmentin.
- 1.3 State the two formulations of Augmentin discussed in this text.
- 1.4 For a person suffering from chronic renal disease, it is important to limit potassium intakes. Pick out the reason why Augmentin should not be administered to this patient.

2. Referring to **document -1**, answer the following questions:

- 2.1 Determine the total number of tablets prescribed for a person who weighs 45 Kg per day.
 - 2.2 Deduce the number of tablets per dose.
- ##### 3. Antibiotics can be fungicidal or bactericidal.
- 3.1 Indicate the difference between these two types.
 - 3.2 Specify the type of antibiotic to which Augmentin belongs.

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أسس التصحيح (تراعي تعليق الدروس والتوصيف المعدل للعام الدراسي 2016-2017 وحتى صدور المناهج المطورة)

First Exercise (10 points)		
The Benefits of Almond Milk		
Part of question	Expected Answers	Mark
1.1	The benefit of almond milk for people who have brittle nails: Vitamin B ₂ presents in almond milk helps nails and hairs grow stronger.	½
1.2	One of the main characteristics of almond milk is that it contains no gluten, lactose or cholesterol.	1
2	Other than Vitamin E, vitamin C is a natural antioxidant.	½
3	Hydrosoluble vitamin (soluble in water) is: vitamin B ₂ . Liposoluble vitamins (soluble in lipids) are: D, A and E vitamins.	4(¼)
4	The energy value of a cup of almond milk containing 50 mg of sugar= $30 + (50 \times 3750) / 1000$ = $30 + 187.5 = 217.5$ calories.	1 ½
5	Vitamin E presented in a cup of almond milk recovers 50% of the daily requirements, so we need two cups to recover all our daily need.	1
6	Cow's milk contains lactose which is responsible for a problem called lactose intolerance for people who do not have lactase, the enzyme needed to digest lactose into glucose and galactose. Since almond milk does not contain lactose so can be used as an alternative to cow's milk for these people.	1 ½
7.1	True; Cholesterol is not found in plants.	1
7.2	False; Calcium, potassium and magnesium minerals presented in almond milk are macrominerals since their daily needs is more than 100 mg.	1
7.3	True; Fibers is not a nutrient for humans because the absence of the cellobiase enzyme	1

Second Exercise (10 points)		
AUGMENTIN - Indications, dosage and side effects		
Part of question	Expected Answers	Mark
1.1	The two active ingredients of Augmentin are: amoxicillin and clavulanic acid	1
1.2	The presence of these active ingredients allows Augmentin to be effective against many bacteria.	1
1.3	The two formulations of Augmentin mentioned in this text are: tablet and liquid.	1
1.4	For a person with chronic renal disease, it is important to limit potassium intakes. Hence, Augmentin can not be administered to this person since it contains potassium (12.7 mg per tablet).	1½
2.1	For adults and children ($m \geq 40$ kg), a total daily dose of 2000 mg of amoxicillin and 250 mg of clavulanic acid is prescribed. That is the dose prescribed a person of 45 Kg per day = $\frac{2000 \text{ mg of amoxicilline}}{250 \text{ mg}} = 4$ tablets or $\frac{250 \text{ of clavulanic acid}}{62.5} = 4$ tablets.	2
2.2	This dose (4 tablets) divided into two daily doses then the number of tablets per dose is $\frac{4}{2} = 2$ tablets.	1
3.1	Antibiotics kill bacteria are called bactericidal. Antibiotics kill fungi are called fungicidal.	¾ ¾
3.2	Augmentin is prescribed for people having bacterial infections then its type is bactericidal.	1