

الاسم:	مسابقة في مادة الثقافة العلمية (كيمياء)
الرقم:	المدة ساعة واحدة

This Exam includes Two Exercises. It Is Inscribed On Two Pages Numbered 1 and 2.

Answer The Two Following Exercises:

First Exercise (10 points)
Healthy Eating: Tips for a Healthy Diet

A healthy diet helps improve your overall health and well being. A healthy diet can help you feel better, provides you with more energy, helps you stay fit and active, and helps you fight stress... Healthy eating begins with learning how to "eat smart". It's not just what you eat, but how you eat. Take time to chew your food, avoid stress while eating, listen to your body, eat early, eat often... You don't need a degree in nutrition to ensure that you get a well-balanced diet that provides the daily nutrients you need, simply focus on six basic food groups... Starving yourself can help you drop a few pounds fast, but usually you will gain that weight as soon as you start eating again... Fat-free does not mean calorie-free: Versions of your favorite products have the same or more calories as the originals. Fat-free foods are high on the Glycemic index and create a spike in your blood sugar... Diet soft drinks and artificially-sweetened yogurts, ice cream and other snacks are often lower in calories. But sugar substitutes can have many negative side effects... Raw coconut oil increases the beneficial HDL cholesterol...

Healthy Eating.Nutritionwerks.com

Questions

- 1- Referring to the text, answer the following questions:
 - 1.1- Extract four advantages of a healthy diet.
 - 1.2- Give three propositions to "eat smart".
 - 1.3- Indicate the correct statements and correct the false ones.
 - i) Coconut oil should be avoided.
 - ii) Fat-free foods are beneficial for a diabetic person.
 - iii) Starving is not a great way to lose weight.
- 2- List the six principal groups of food.
- 3- Give the factors that should be taken into consideration when planning a balanced diet.
- 4- Specify the effect of each of the following activities on the nutritive value of foods (oil, fruits and vegetables):
 - Frying with the same oil many times.
 - Cooking fruits and vegetables.
- 5- During starvation, the energy requirements are provided by the storage nutrients.
 - 5.1- Name these nutrients.
 - 5.2- Complete the following catabolic pathway:

$$\dots \xrightarrow{\text{Digestion}} \text{Glucose} \xrightarrow{\text{Cellular oxidation}} \dots + \dots + \text{Energy}$$

Second Exercise (10 points)

Aspirin: The Preferred Drug of Sportsmen

In sporting medium, aspirin is often used to fight muscular pains or to fluidify blood in the hope of improving the performance... There are few drugs which are the subject of so many indications as aspirin. Aspirin is used in the treatment of migraine, arthritis, influenza, etc.

Classically, Aspirin has four distinct actions. At first, it is analgesic, antipyretic and anti-inflammatory drug; this is its oldest indication. At last, it is anti-coagulant, which means that it prevents the blood platelets to fix at the dilapidated walls * of arteries and thus makes it possible to avoid the formation of clots which are the origin of thromboses.

Since this quality of aspirin is discovered, fifty years ago, it is used as a preventive treatment of cardiovascular diseases. People "at risk" follow often a long treatment based on aspirin...

In sport domain, the drug also has rather favorable priorities. Recall that this one is not figured on the list of prohibited substances. According to evidences, it would be used widely in relieving pain such as aches, sunstrokes, articular pains, tendinitises, etc.

Sportsmen should be nevertheless vigilant. When the weather is hot, the aspirin could indeed disturb homeothermy ** and leads to dehydration.

The reflex which consists in relieving small pains by taking aspirin involves also a significant risk of aggravation... With therapeutic amount, in fact it prolongs the duration of bleeding and could complicate the administration of medical care in case of an accident.

* Dilapidated: damaged.

** Homeothermy: adjustment of temperature.

Gilles Goetghebuer, journaliste santé e-sante.fr

Questions

1- Referring to the text, answer the following questions:

1.1- Specify why aspirin is used as a preventive treatment of cardiovascular diseases.

1.2- Indicate three cases where sportsmen use aspirin.

1.3- List three reasons for which sportsmen must be vigilant in taking the aspirin.

2- Give the meaning of each one of the three following terms: analgesic, antipyretic and anti-inflammatory.

3- The following types of drugs are available in the market: aspirin 325 mg, coated aspirin, buffered and effervescent aspirin.

Specify if these drugs have the same pharmaceutical effects and the same inert ingredients.

4- A drug can be presented in several forms. Indicate four of these forms.

5- A patient suffers from a cardiovascular disease and follows a long medical treatment with an anti-coagulant drug, its physician advises him to take paracetamol and not aspirin to relieve his pain and lower his fever.

Justify, based on the pharmaceutical effects of these two drugs, the recommendation of the physician.

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مشروع معيار التصحيح

First Exercise (10 points) Healthy Eating: Tips for a Healthy Diet

Part of the Q	Answer	Mark
1.1	The four advantages are: provides you with more energy; helps you stay fit and active; helps you fight stress; helps you feel better.	1
1.2	i- Avoid stress while eating. ii- Listen to your body. iii- Take time to chew your food.	1
1.3	i) False since coconut oil increases the beneficial HDL cholesterol. ii) False since Fat-free foods are high on the Glycemic index and create a spike in your blood sugar. iii) True.	1.5
2	The six principal groups of food are: <ul style="list-style-type: none"> • Meat ,fish, poultry, and eggs • Milk and dairy products • Fatty substances • Cereals and leguminous grains • Fruits and vegetables. • Beverages 	1.5
3	The factors that should be taken into consideration are: <ul style="list-style-type: none"> • Cost and availability. • Variety and appearance. • Consumer preferences. • Religious and culture food habits. 	1
4	- Frying with the same oil many times decreases the nutritive value of oils since it leads to the oxidation of fats and by consequences to the formation of toxic substances. - Cooking fruits and vegetables decreases the nutritive value of these foods since it leads to the loss of minerals and hydrosoluble vitamins and the destruction of thermosensitive vitamins.	2
5.1	These nutrients are: glycogen and triglycerides (fats).	1
5.2	Glycogen $\xrightarrow{\text{Digestion}}$ Glucose $\xrightarrow{\text{Cellular oxidation}}$ CO ₂ + H ₂ O + Energy	1

Second Exercise (10 points)
Aspirin: The Preferred Drug of Sportsmen

Part of the Q	Answer	Mark
1.1	It is used as a preventive treatment of cardiovascular diseases because it prevents blood platelets to be fixed at the dilapidated walls of arteries and thus avoid the formation of clots which are the origin of thromboses.	1
1.2	Aspirin is used in the following cases: In relieving: aches, sunstrokes, articular pains, tendinitis.	1.5
1.3	Aspirin could in fact disturb homeothermy and support dehydration. With therapeutic amount, it prolongs the duration of bleeding and could complicate the administration of medical care in case of an accident.	1.5
2	<ul style="list-style-type: none"> - Analgesics: is a drug used to reduce or eliminate pain. - Anti-pyretic: is a drug used to lower fever. - Anti-inflammatory drug: is often used to reduce or eliminate inflammation. 	1.5
3	These drugs have the same pharmaceutical effects since all these drugs contain the same active ingredient (aspirin) but they have different inert ingredients since they are different drugs.	1.5
4	Four forms of drugs are: tablets, syrups, suppositories and injections.	1
5	Paracetamol and aspirin are analgesics and antipyretics but only aspirin is anti-coagulant. This patient is advised to take paracetamol to relieve pain and to lower the fever since the combination of aspirin with another anti-coagulant could provoke bleedings.	2