مسابقة في الثقافة العلمية- مادة الكيمياء
المدة: ساعة واحدة

الاسم:
الرقم:

This Exam Includes two Exercises. It is inscribed on two pages numbered 1 and 2.
The Use of a Non-Programmable Calculator Is Allowed.

Answer the Two following Exercises:

Exercise 1 (10 points) **Whole Bread and White Bread**

Whole wheat bread is made from all components of the grain — the bran, germ, and endosperm — This allows the bread to retain vitamins, minerals, and fiber, whereas white bread is made from flour refined to remove the bran and the germ. When it is refined, many of the beneficial nutrients are removed from the flour. Only the endosperm rich in starch remains, which is low in nutritional value.

As a result, whole wheat bread is usually healthier than white bread, as it contains more fiber, has a higher nutritional value, and may have fewer calories. This is because the bran and the germ have richer concentrations of vitamins and minerals such as B vitamins, vitamin E, iron, magnesium and zinc than the endosperm.

However, white bread may be a better choice if you have a GI (gastrointestinal) or digestive health condition, such as Crohn's disease, or if suffering from diarrhea since the lower amount of fiber can be easier on your stomach.

https://www.insider.com/wheat-bread-vs-white-bread

Questions:

1. Referring to the text:
1.1. Pick out the two nutrients found in whole bread.
1.2. Give two advantages for consuming whole bread instead of white bread.
1.3. Justify that it is better for people suffering from GI condition to consume white bread rather than whole bread.

2. Match the nutrients of **column I** to their corresponding functions in **column II**.

Column I	Column II
a- Proteins	i- Protection and control of body functioning
b- Carbohydrates and lipids	ii- Structural requirements
c- Vitamins and minerals	iii- Energy requirements

3. Choose the correct answer.
Bread is a food rich in starch which is a polysaccharide that contains hundreds or thousands units of:
a) galactose **b)** glucose **c)** fructose

4. Answer by true or false.
4.1. Starch is considered as energetic nutrient for humans.
4.2. Vitamin A and vitamin D are hydrosoluble.
4.3. Knowing that the daily need of magnesium for adults is 420 mg, then magnesium is classified as a trace mineral.

5. Sucrose is present in bread.
5.1. Name the chemical elements that constitute sucrose.
5.2. Recopy and complete the word equation of the hydrolysis reaction of sucrose:

Sucrose + Water → …… + ……

6. Document-1 shows the masses of carbohydrates, lipid and protein in 100g of sesame biscuit prepared from white flour.

Protein	Lipid	Carbohydrates
9.9g	21g	66.5g

Document-1

Calculate the energy value that corresponds to 100 g of sesame biscuit.

Given: 1 g of carbohydrates provides 3.75 Kcal, 1 g of lipid provides 9 Kcal, 1 g of protein provides 4 Kcal.

Exercise 2 (10points) **Azicin ® 500 Benta**

Coronaviruses (COVID-19) are a large family of viruses that cause illness ranging from the common cold to more severe diseases.

Azicin® 500 Benta, a licensed, widely available, cheap, and generally safe drug has been proposed as a treatment for COVID-19.

Document-1 represents some information extracted from **Azicin® Benta** leaflet.

- **Forms and presentation**
  Azicin ® 500 Benta: film coated tablet: Box of 3
- **Composition**
  Azicin ® 500 Benta: each film coated tablet contains Azithromycin Dihydrate equivalent to Azithromycin 500 mg.
- **Excepients:** Starch,……
- **What it is used for**
  Therapeuatic class: Antibiotic used for the treatment of certain infections caused by bacteria, such as: - Ear infection
  - Skin and soft tissues infections.

Document-1

Questions:

1. Referring to **Document-1**, answer the following questions:
1.1. Name the active ingredient of **Azicin ® 500 Benta.**
1.2. Indicate the therapeutic effect of Azithromycin.
1.3. Pick out two infections treated by **Azicin ® 500 Benta**.

2. Azicin ® 500 Benta is presented in tablet form; give three other formulations for a medicinal drug.

3. Match the items in **column I** to its corresponding item in **column II**

Column I	Column II
a- Antipyretic	i. Kills or inhibits the growth of fungus
b- Anti-inflammatory drug	ii. Reduces fever
c- Fungicidal	iii. Reduces the inflammation

4. Antibiotics are classified as broad spectrum and narrow spectrum antibiotics.
4.1. Distinguish between a broad spectrum antibiotic and a narrow spectrum antibiotic.
4.2. Give one disadvantage of the use of a broad spectrum antibiotic.

5. "Azithromycin use in primary care has increased during the COVID-19 pandemic, which could contribute to bacteria resistance."
5.1. What is the "bacteria resistance"?
5.2. Describe one mechanism that makes a bacterium resistant to an antibiotic.

اسس التصحيح

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Exercise 1 (10 points) Whole Bread and White Bread

Part of the Q	Answer	Mark
1.1.	Vitamins and minerals.	**1**
1.2.	Whole bread it contains more fiber, has a higher nutritional value, and may have fewer calories than white bread.	**1**
1.3.	People suffering from GI condition better to consume white bread rather than whole bread, since the lower amount of fiber can be easier on their stomach.	**1**
2.	a-ii ; b-iii ; c- i.	**1.5**
3	3-b	**0.5**
4.1.	True .	**0.5**
4.2.	False .	**0.5**
4.3.	False.	**0.5**
5.1.	The chemical elements that constitute sucrose are: Carbon, hydrogen and oxygen.	**0.75**
5.2.	Sucrose + Water → glucose + fructose.	**1**
6.	Energy value = E = (9.9× 4) + (21×9) + (66.5× 3,75) = 477.975 Kcal.	**1.75**

Exercise 2 (10 points) Azicin ® 500 Benta

Part of the Q	Answer	Mark
1.1	The active ingredient Azithromycin**.**	**1**
1.2	**Azicin ® 500 Benta** Antibiotic.	**1**
1.3	The two infections: Ear infection and Skin and soft tissues infections.	**1**
2.	The three formulations are: capsules, cream, ointment, suppositories,……	**1.5**
3	**a.** ii **b.** iii **c.** i	**1.5**
4.1	Broad spectrum antibiotic is effective for a wide variety of microorganisms while narrow spectrum antibiotic is affective against a specific microorganism.	**1**
4.2.	It may kill some beneficial bacteria such as intestinal floras	**1**
5.1.	The capacity of bacteria to develop resistance to antibiotics. A bacterium that cannot any more be eradicated by the antibiotic	**1**
5.2.	Some resistant bacteria have the capacity to produce enzymes, which modify or break the molecules of the antibiotic and render it inactive. Or Change the structure of their site of action so that the antibiotic will not be able to kill them Or bacteria modify their permeability to the antibiotic Or they acquire a state of tolerance.	**1**