**State of Israel**
**Ministry of Education**
Exam Type:
א. *Bagrut* for high schools
ב. *Bagrut* for external examinees
Exam date: Summer 2015
**Exam number: 037303, 27**
Attachments: (1) Answer booklet
(2) Periodic table
(3) Electronegativity table
(4) Formulas for calculations
(5) Functional groups
**English translation (3)**

**מדינת ישראל**
**משרד החינוך**
סוג הבחינה:
א. בגרות לבתי ספר על־יסודיים
ב. בגרות לנבחנים חיצוניים
מועד הבחינה: קיץ תשע"ה, 2015
**מספר השאלון: 037303, 27**
נספחים: (1) גיליון תשובות
(2) הטבלה המחזורית
(3) טבלת אלקטרושליליות
(4) נוסחאות לחישובים
(5) קבוצות פונקציונליות
**תרגום לאנגלית (3)**

# Chemistry

3 points

# כימיה

3 יחידות לימוד

**Instructions for examinees**

א. Duration of the exam: Three hours

ב. Exam structure and breakdown of points:
This exam has two parts.
Part I — Required — (2×20) — 40 points
Part II — (3×20) — 60 points
Total — 100 points

ג. Material that may be used during the exam:
(1) A calculator (graphing calculators are permitted).
(2) A Hebrew-foreign language/foreign language-Hebrew dictionary.

ד. Special instructions:
(1) **Note:** Question 1 in the first part of the exam includes eight items א-ח. Four possible answers are given for each item and you must choose the correct answer for each one. Mark the correct answers in your answer booklet.
(2) **Attach your answer booklet to the test booklet.**
(3) **In Part I, you must answer both questions. In Part II, you must answer three of the six questions.**

Write all of your rough work (calculations, notes, etc.) on separate pages of the answer booklet only. Write the word "טיוטה" on the top of each of these pages. If you write any sort of work outside the answer booklet, your test may be disqualified!

**Good Luck!**

**הוראות לנבחן**

א. משך הבחינה: שלוש שעות.

ב. מבנה השאלון ומפתח ההערכה:
בשאלון זה שני פרקים.
פרק ראשון – חובה – (20×2) – 40 נקודות
פרק שני – (20×3) – 60 נקודות
סה"כ – 100 נקודות

ג. חומר עזר מותר בשימוש:
(1) מחשבון (כולל מחשבון גרפי).
(2) מילון עברי-לועזי / לועזי-עברי.

ד. הוראות מיוחדות:
(1) **שים לב:** בשאלה 1 שבפרק הראשון שמונה סעיפים א-ח. לכל סעיף מוצגות ארבע תשובות, ומהן עליך לבחור בתשובה הנכונה. את התשובות הנכונות עליך לסמן בגיליון התשובות.
(2) **הדק את גיליון התשובות למחברת הבחינה.**
(3) **בפרק הראשון יש לענות על שתי השאלות, ובפרק השני יש לענות על שלוש מבין שש השאלות.**

כתוב במחברת הבחינה בלבד, בעמודים נפרדים, כל מה שברצונך לכתוב כטיוטה (ראשי פרקים, חישובים וכדומה).
רשום "טיוטה" בראש כל עמוד טיוטה. רישום טיוטות כלשהן על דפים שמחוץ למחברת הבחינה עלול לגרום לפסילת הבחינה!

**ב ה צ ל ח ה !**

# Questions

## Part One (40 points)

**Answer both Question 1 and Question 2** (each question – 20 points).

**1.** Answer all of the items א through ח in the attached answer booklet (each item – 2.5 points).

For each item, circle the number that corresponds to the correct answer.

**Before you answer, read each of the possible answers.**

**א.** Radon, $Rn_{(g)}$, is an element that is a member of the family of noble gases.

The isotope $^{222}_{86}Rn$ is produced in a process that involves the emission of radioactive radiation.

What is the correct formula for the process in which $^{222}_{86}Rn$ is produced?

1. $^{218}_{84}Po \longrightarrow {}^{222}_{86}Rn + \alpha$
2. $^{226}_{88}Ra \longrightarrow {}^{222}_{86}Rn + \alpha$
3. $^{226}_{88}Ra \longrightarrow {}^{222}_{86}Rn + \beta$
4. $^{223}_{86}Rn \longrightarrow {}^{222}_{86}Rn + \beta$

**ב.** Determine which sentence is correct regarding the first ionization energy ($E_1$) of magnesium, Mg, and the first ionization energy ($E_1$) of calcium, Ca.

1. The $E_1$ of Mg is greater than the $E_1$ of Ca, because the valence electrons in an atom of Mg are at a lower energy level.
2. The $E_1$ of Mg is greater than the $E_1$ of Ca, because there are fewer protons in the nucleus of a Mg atom.
3. The $E_1$ of Mg is less than the $E_1$ of Ca, because the valence electrons in an atom of Mg are at a lower energy level.
4. The $E_1$ of Mg is less than the $E_1$ of Ca, because there are fewer protons in the nucleus of a Mg atom.

/continued on page 3/

**ג.** Formulas of five molecules are shown below:

$CF_4$ , $CHF_3$ , $CH_2F_2$ , $CH_3F$ , $CH_4$

Each of these molecules has a tetrahedral spatial structure.

Which (one or more) of the given molecules has/have only temporary dipoles?

1. $CH_4$
2. $CH_4$ and $CF_4$
3. $CH_4$, $CH_2F_2$ and $CF_4$
4. $CH_3F$, $CH_2F_2$ and $CHF_3$

**ד.** While resting, the human body takes in 2.6 grams of oxygen, $O_{2(g)}$, per minute from the lungs.

How many atoms of oxygen does the human body take in per minute?

Given: One mol of particles contains $6.02 \cdot 10^{23}$ particles.

1. $\frac{6.02 \cdot 10^{23}}{0.081}$
2. $\frac{6.02 \cdot 10^{23}}{0.162}$
3. $6.02 \cdot 10^{23} \cdot 0.081$
4. $6.02 \cdot 10^{23} \cdot 0.162$

**ה.** Magnesium, $Mg_{(s)}$, reacts with hydronium ions, $H_3O^+_{(aq)}$, as shown in the following reaction:

$$Mg_{(s)} + 2H_3O^+_{(aq)} \longrightarrow Mg^{2+}_{(aq)} + H_{2(g)} + 2H_2O_{(\ell)}$$

Which one of the following statements is true for this reaction?

1. Hydrogen, $H_{2(g)}$, is a product of oxidation.
2. $Mg^{2+}_{(aq)}$ ions are a product of reduction.
3. Electrons are transferred from $H_3O^+_{(aq)}$ ions to Mg atoms.
4. When 0.15 mols of $Mg_{(s)}$ react, 0.3 mols of electrons are transferred.

**(Note: This question continues on the next page.)**

/continued on page 4/

**١.** Limestone contains a high percentage of calcium carbonate, $CaCO_{3(s)}$.

Given reaction:

$$CaCO_{3(s)} + 2H_3O^+_{(aq)} \longrightarrow Ca^{2+}_{(aq)} + CO_{2(g)} + 3H_2O_{(\ell)}$$

Which statement is correct?

1. We can distinguish between a solution of $HC\ell_{(aq)}$ and a solution of $HNO_{3(aq)}$ based on their reactions with $CaCO_{3(s)}$.
2. When an aqueous solution of an acid is dripped over limestone, bubbles are formed.
3. We can distinguish between the solids $CaCO_{3(s)}$ and $MgCO_{3(s)}$ based on their reactions with a solution of $HC\ell_{(aq)}$.
4. The given reaction is used to identify the gas carbon dioxide, $CO_{2(g)}$.

**٢.** A solution of sulfuric acid, $H_2SO_{4(aq)}$, was prepared. The pH of the solution was pH = 2.

A certain substance was added to the acid, which caused the pH of the solution to decrease.

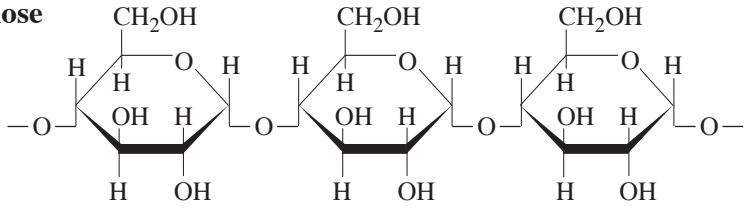
What substance was added to the $H_2SO_{4(aq)}$ solution?

1. $HBr_{(g)}$
2. $NH_{3(g)}$
3. $H_2O_{(\ell)}$
4. $NaOH_{(s)}$

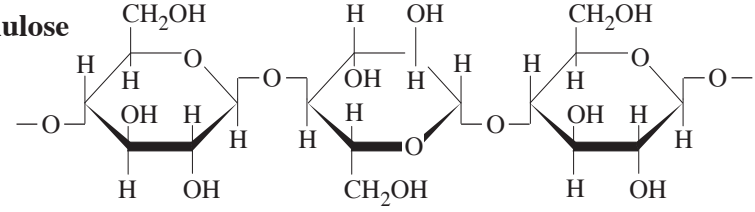
/continued on page 5/

**ח.** Haworth projections of segments of two molecules are shown below: a segment of an amylose molecule (a component of starch) and a segment of a cellulose molecule.

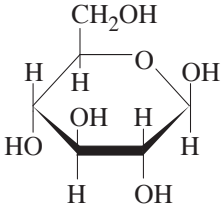
**Amylose**



**Cellulose**



The Haworth projection of β-glucose is also given:



Three statements are presented below:

I. Amylose molecules and cellulose molecules are made up of units of glucose.

II. In both amylose molecules and cellulose molecules, we find an α(1-4) glycosidic bond.

III. Hydrogen bonds are formed between molecules of amylose and hydrogen bonds are also formed between molecules of cellulose.

Which of these statements are correct?

1. I and II
2. II and III
3. I and III
4. I, II and III

/continued on page 6/

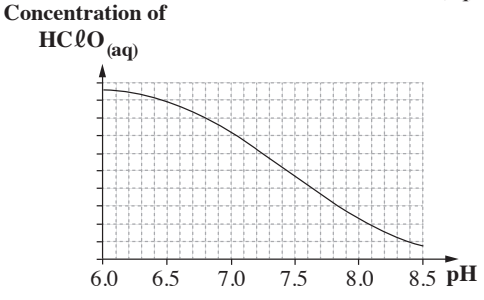
# Analysis of a Passage from a Scientific Article - Required

**2.** Read the passage below and answer all of the items that follow, א-ד.

## Swimming in Chemistry

A swimming pool is a place for recreation, enjoyment and physical exercise. Bacteria can easily multiply in the water of a swimming pool so, in order to protect the health of the swimmers, this water is disinfected.

One method of disinfection involves adding a concentrated aqueous solution of sodium hypochlorite, $NaC\ell O_{(aq)}$, to the water. This solution conatins $Na^{+}_{(aq)}$ ions and $C\ell O^{-}_{(aq)}$ ions, as well as molecules of hypochlorous acid, $HC\ell O_{(aq)}$. $HC\ell O_{(aq)}$ is the active substance that acts against bacteria. The higher the concentration of $HC\ell O_{(aq)}$ in the pool water, the more effective the disinfection. The concentration of $HC\ell O_{(aq)}$ depends on the pH, among other things. The graph below provides a schematic description of the effect of pH on the concentration of $HC\ell O_{(aq)}$ in the pool water.




In swimming pools, the pH is kept between 7.2 and 7.4. At other pH levels, the water will irritate the skin and eyes. Uric acid, $C_5H_4N_4O_{3(aq)}$, is sometimes found in swimming pools. The source of this compound is the sweat and, especially, the urine of swimmers. Uric acid reacts with $HC\ell O_{(aq)}$ to form (among other things) nitrogen trichloride, $NC\ell_{3(\ell)}$, which is a volatile liquid, and the gas cyanogen chloride, $CNC\ell_{(g)}$. These substances irritate the respiratory tract, skin and eyes, and are responsible for the characteristic odor of swimming pools, an odor that is mistakenly attributed to an excessive amount of disinfectant in the water. For the sake of the health of the swimmers, it is very important to be sure to maintain an appropriate pH range, an appropriate concentration of active material and a low concentration of products of reactions involving uric acid. This, along with responsible behavior on the part of the swimmers, will ensure a pleasurable swimming experience.

Adapted from:

1. "Swimming pool urine combines with chlorine to pose health risks," Science Daily, April 2014
2. http://www.pahlen.com/users-guide/ph-and-chlorine

/continued on page 7/

**א.** Formulas of molecules of two of the substances mentioned in the passage are shown below:

$HC\ell O$ , $CNC\ell$

i Draw the Lewis electron-dot structure [נוסחת ייצוג אלקטרונית] of each of these molecules.

ii Determine the oxidation state of the chlorine, $C\ell$, atom in each of the molecules.

**ב.** i The molecules of the active substance $HC\ell O_{(aq)}$ are formed through a reaction between $C\ell O^-_{(aq)}$ ions and molecules of $H_2O_{(\ell)}$. Is this reaction an oxidation-reduction reaction or an acid-base reaction? Explain.

ii In the reaction in which cyanogen chloride, $CNC\ell_{(g)}$, is formed, does the active substance, $HC\ell O_{(aq)}$, act as an oxidant or as a reductant? Explain.

**ג.** Explain why, at room temperature, nitrogen trichloride, $NC\ell_{3(\ell)}$, is a liquid, while cyanogen chloride, $CNC\ell_{(g)}$, is a gas.

**ד.** According to the information in the passage:

i At what pH level is the disinfection more effective: 6.5 or 7.3? Explain.

ii Name two factors that could lower the amount of the active substance, $HC\ell O_{(aq)}$, in the pool water.

/continued on page 8/

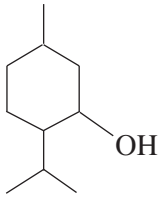
## **Part Two** (60 points)

Answer three of the questions 3-8 (each question – 20 points).

## Structure and Bonding, Properties of Materials and Oxidation-Reduction

**3.** Menthol, $C_{10}H_{20}O_{(s)}$, is a substance produced from leaves of the mint plant. Menthol is used as a flavoring agent in the food industry and the pharmaceutical industry.

The abbreviated structural formula of a menthol molecule is shown below:




**א.** i Hydrogen bonds can form between menthol molecules and water molecules.

Draw a schematic diagram of one of the hydrogen bonds that could form between a menthol molecule and a water molecule.

ii Menthol is not very soluble in water, but dissolves very well in hexane, $C_6H_{14(\ell)}$.

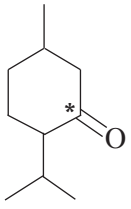
Explain these two facts.

iii Write out an equation for the process by which menthol dissolves in hexane.

/continued on page 9/

Menthone, $C_{10}H_{18}O_{(\ell)}$, is another substance that comes from the mint plant. Menthone is mainly used as a fragrance in the perfume and cosmetics industry.

The abbreviated structural formula of a menthone molecule is shown below.




**ב.** Write the formula of the functional group in a molecule of menthol and the formula of the functional group in a molecule of menthone.

**ג.** In a menthol molecule, the oxidation state of the carbon atom that is bound to the functional group is zero.

i Determine the oxidation state of the carbon atom that is labeled with an asterisk (*) in the menthone molecule. Explain.

ii In the laboratory, menthone is produced from menthol via an oxidation-reduction reaction. This process requires an additional substance. Does that additional substance act as an oxidant or as a reductant? Explain.

**ד.** The melting point of menthone is lower than the melting point of menthol. Explain why.

/continued on page 10/

## Stoichiometry

**4.** A person who is dehydrated is treated with a physiological saline solution, which is injected intravenously.
Physiological saline solution is an aqueous solution of sodium chloride, $NaC\ell_{(s)}$, that contains 9 grams dissolved in 1 liter.

**א.** i Write out an equation for the process by which $NaC\ell_{(s)}$ dissolves in water.

ii What is the molar concentration of sodium chloride in physiological saline solution? Show detailed calculations.

iii What is the total number of mols of particles of the dissolved substance in 1 liter of physiological saline solution? Explain.

**ב.** The concentration of a given $NaC\ell_{(s)}$ solution is unknown. In order to determine the molar concentration of this solution, a 20 mL sample of the solution was taken and mixed with a 0.05 M solution of lead nitrate, $Pb(NO_3)_{2(aq)}$.
The following reaction occurred: $Pb^{2+}_{(aq)} + 2C\ell^{-}_{(aq)} \longrightarrow PbC\ell_{2(s)}$
12 mL of the $Pb(NO_3)_{2(aq)}$ solution were needed to react with all of the $C\ell^{-}_{(aq)}$ ions in the sample.

i Calculate the number of mols of $C\ell^{-}_{(aq)}$ ions in the sample. Show detailed calculations.

ii Determine whether the concentration of the tested solution is appropriate for the treatment of dehydration. Show the details of your calculations and explain your conclusion.

**ג.** Solutions injected intravenously may sometimes contain glucose, in addition to sodium chloride.

i Write out an equation for the process by which glucose, $C_6H_{12}O_{6(s)}$, dissolves in water.

ii 1 liter of solution was prepared by dissolving $NaC\ell_{(s)}$ and $C_6H_{12}O_{6(s)}$ in water.
The molar concentration of $C\ell^{-}_{(aq)}$ ions in this solution is 0.03 M.
The total number of mols of particles of the two dissolved substances is 0.282 mols.
How many grams of glucose, $C_6H_{12}O_{6(s)}$, were dissolved in water to produce 1 liter of this solution?
Show detailed calculations.

/continued on page 11/

## Oxidation-Reduction and Stoichiometry

**5.** Vitamin C is an antioxidant found in fruits and vegetables, as well as in tablets consumed as a nutritional supplement.

**א.** Two processes, (1) and (2), are shown below. Determine which of these processes, (1) or (2), could occur. Explain.

(1) Vitamin C reacts with $Fe^{3+}_{(aq)}$ ions and $Fe^{2+}_{(aq)}$ ions are formed.

(2) Vitamin C reacts with $Cu^{+}_{(aq)}$ ions and $Cu^{2+}_{(aq)}$ ions are formed.

Lugol's solution is a solution that contains iodine, $I_{2(aq)}$.
The iodine gives this solution a brown color.
Iodine, $I_{2(aq)}$ reacts with Vitamin C. When Lugol's solution was dripped onto a piece of white cotton fabric, a brown stain appeared on the fabric.
A two-part experiment was then carried out.

**ב.** In the first part of the experiment, a tablet containing Vitamin C was dampened with water and rubbed on the stain. The brown stain disappeared. Determine whether $I^{-}_{(aq)}$ ions or $IO^{-}_{(aq)}$ ions were formed on the cloth in the reaction between the Vitamin C and $I_{2(aq)}$. Explain.

**ג.** In the second part of the experiment, a bleach solution was sprinkled on the part of the cloth where the brown stain had been (before it disappeared), and the stain re-appeared. Bleach solution contains $C\ell O^{-}_{(aq)}$ ions.

i Between which ions did a reaction occur in the second part of the experiment?

ii Why did the brown stain re-appear on the fabric?

iii In the reaction that occurred in the second part of the experiment, what was the oxidant [המחמצן] and what was the reductant [המחזר]? Explain.

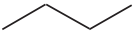
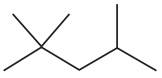
**ד.** i Lugol's solution can be used to determine the mass of Vitamin C in one tablet. Vitamin C reacts with the $I_{2(aq)}$ in the Lugol's solution in a molar ratio of 1:1.
58 mL of Lugol's solution, in which the concentration of $I_{2(aq)}$ is 0.05 M, are needed for the Vitamin C in one tablet to completely react with the iodine.
The molar mass of Vitamin C is 176 $\frac{\text{grams}}{\text{mol}}$.
Calculate the mass of Vitamin C in one tablet.
Show detailed calculations.

ii Determine whether a solution of hydroiodic acid, $HI_{(aq)}$, could also be used to determine the mass of Vitamin C in one tablet.
Explain.

/continued on page 12/

## Properties of Materials, Gaseous State and Stoichiometry

**6.** Data concerning three compounds used as combustible materials are presented in the table below.

| **Material** | **Abbrev. structural formula** | **Melting point** (°C) | **Boiling point** (°C) | **Use** |
|---|---|---|---|---|
| Propane |  | – 190 | – 42 | cooking gas |
| Butane |  | – 138 | – 0.5 | cooking gas |
| Iso-octane |  | – 107 | 99 | vehicle fuel |

**א.** i Describe iso-octane at a temperature of 25°C at the microscopic level.

ii Isobutane is an isomer of butane. The abbreviated structural formula of isobutane is shown below:

The boiling point of isobutane is lower than the boiling point of butane. Explain why.

iii To prepare food outdoors, people use cooking gas stored in portable cylinders.
In areas in which the temperature falls below 0°C, propane cylinders are used instead of butane cylinders. Explain this fact.

**ב.** A sealed container kept at room temperature contains 5 mols of propane gas at a pressure of 1 atmosphere.
The volume of the container was decreased as the temperature was kept constant.
Following the decrease in the volume of the container:

i Is the number of mols of gas inside the container greater than, less than or equal to 5? Explain.

ii Is the pressure of the gas inside the container greater than, less than or equal to 1 atmosphere? Explain.

/continued on page 13/

**ג.** Cooking gas is dangerous, but difficult to detect because it is odorless.
In order to provide a warning in case of a gas leak,
ethanethiol, $C_2H_6S_{(\ell)}$, is added to cooking gas.
The gas ethanethiol, $C_2H_6S_{(g)}$, reacts with oxygen, $O_{2(g)}$, to yield carbon dioxide, $CO_{2(g)}$, water vapor, $H_2O_{(g)}$ and sulfur dioxide, $SO_{2(g)}$.

i Write out and balance the equation of the reaction of $C_2H_6S_{(g)}$ with $O_{2(g)}$.

ii The reaction of a sample of $C_2H_6S_{(g)}$ with a sufficient amount of $O_{2(g)}$ yielded 320 mL of $CO_{2(g)}$. What is the <u>total volume</u> of the products of this reaction? <u>Show detailed calculations</u>.
Assume that all of the gases are subject to the same temperature and pressure conditions.

/continued on page 14/

## Acids and Bases and Stoichiometry

**7.** Some of the substances used around the house are acids or bases.
Five aqueous solutions were prepared for household use. Information regarding the substances and the prepared solutions is presented in the table below.

| **Substance** | **Acid for household use** | **Apple cider vinegar** | **Table salt** | **Baking soda** | **Milk of magnesia** |
|---|---|---|---|---|---|
| **Use** | removing lime | flavoring food | flavoring food | baking | treating heartburn |
| **pH of the solution** | 2.2 | 4.0 | 7.0 | 8.4 | 9.8 |
| **Color of the solution in the presence of purple-cabbage indicator** | red | pink | blue | blue-green | green-yellow |

**א.** Which of the acidic solutions in the table has the highest concentration of hydronium, $H_3O^+_{(aq)}$, ions? Explain.

**ב.** Two of the aqueous solutions of substances in the table were mixed together. Reaction (1) occurred:

(1) $H_3O^+_{(aq)} + OH^-_{(aq)} \longrightarrow 2H_2O_{(\ell)}$

i Name two solutions that react with one another as shown in Reaction (1).

ii After the mixing of the two solutions that you named in Sub-item ב i, several drops of the indicator were added to the mixture and the entire mixture was stirred. A pink color was obtained.
Explain why this pink color was obtained.

/continued on page 15/

**ג.** Calcium carbonate, $CaCO_{3(s)}$, is the main component of the lime that accumulates in bathrooms.

Acid for household use, which is an aqueous solution of hydrochloric acid, $HC\ell_{(aq)}$, can be used to remove this lime.

$HC\ell_{(aq)}$ solution reacts with $CaCO_{3(s)}$ as shown in Reaction (2):

(2) $CaCO_{3(s)} + 2H_3O^+_{(aq)} \longrightarrow Ca^{2+}_{(aq)} + 3H_2O_{(\ell)} + CO_{2(g)}$

Calculate the mass of $CaCO_{3(s)}$ that can be removed by 240 mL of 0.3 M $HC\ell_{(aq)}$ solution. Show detailed calculations.

**ד.** In a laboratory, aqueous solutions of the following three substances were prepared: nitric acid, $HNO_{3(\ell)}$, potassium nitrate, $KNO_{3(s)}$, and ammonia, $NH_{3(g)}$. Each solution was prepared in a separate container.

i Write out an equation that describes the process that occurred as each of these substances was prepared.

ii Several drops of the indicator were added to each of the three solutions.

Determine in which solution a blue-green color was obtained. Explain.

/continued on page 16/

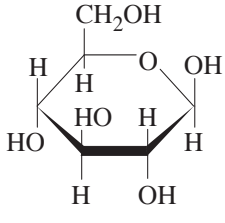
## Food Chemistry

**8.** This question concerns breast milk, the natural, basic food of a baby during his or her first months of life.

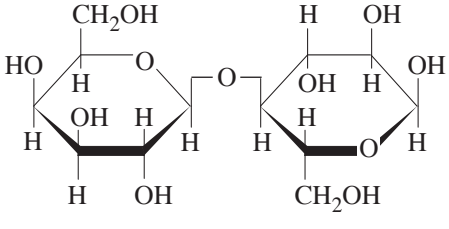
In addition to water, breast milk also contains carbohydrates, fats, proteins and vitamins.

**א.** The caloric value of 100 mL of breast milk is 70 kilocalories.
100 mL of breast milk contains 7.4 grams of carbohydrates, which account for 42.3% of the total caloric value of the milk.
Calculate the caloric value of 1 gram of carbohydrates.
Show detailed calculations.

**ב.** The only disaccharide in breast milk is lactose. A molecule of lactose is made up of a unit of glucose and a unit of galactose.
Haworth projections of lactose and β-glucose are shown below:




β **Glucose**




**Lactose**

i Is the galactose ring in a molecule of lactose α-galactose or β-galactose? Explain.

ii An aqueous solution of lactose always contains both α-lactose and β-lactose. Explain why.

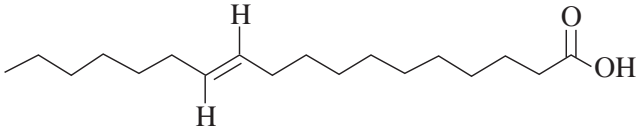
/continued on page 17/

The main fatty acids that make up the triglycerides found in breast milk are presented in the table below.

| Fatty acid | Symbol | Abbreviated formula of the fatty acid |
|---|---|---|
| Palmitic acid | P | C16:0 |
| Oleic acid | O | C18:1ω9, cis |
| Linoleic acid | L | C18:2ω6, cis, cis |

**ג.** Vaccenic acid is a fatty acid that is found in breast milk in small quantities.

An abbreviated structural formula of a molecule of vaccenic acid is shown below:




i Write the abbreviated formula of this fatty acid.

ii Which of the fatty acids in the table above is an isomer of vaccenic acid? Explain.

iii The melting point of vaccenic acid is higher than the melting point of the isomer you named for Sub-item ג ii. Explain why.

**ד.** Some babies are fed a breast-milk substitute.

The triglyceride that is the source of palmitic acid in breast milk is different from the trigyceride that is the source of palmitic acid in the substitute. In breast milk, the triglyceride is OPO; whereas the triglyceride in the milk substitute is POP.

The two triglycerides, OPO and POP, are hydrolyzed.

Are the products of the hydrolysis of the two triglycerides the same or different? Explain.

**Good Luck!**



**בהצלחה!**