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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1153 - English
1st Year 1st Semester
Batch 03
End Semester Assignment Examination

Date: 12th June 2024
Time: 1.30 pm – 2.30 pm – One Hour

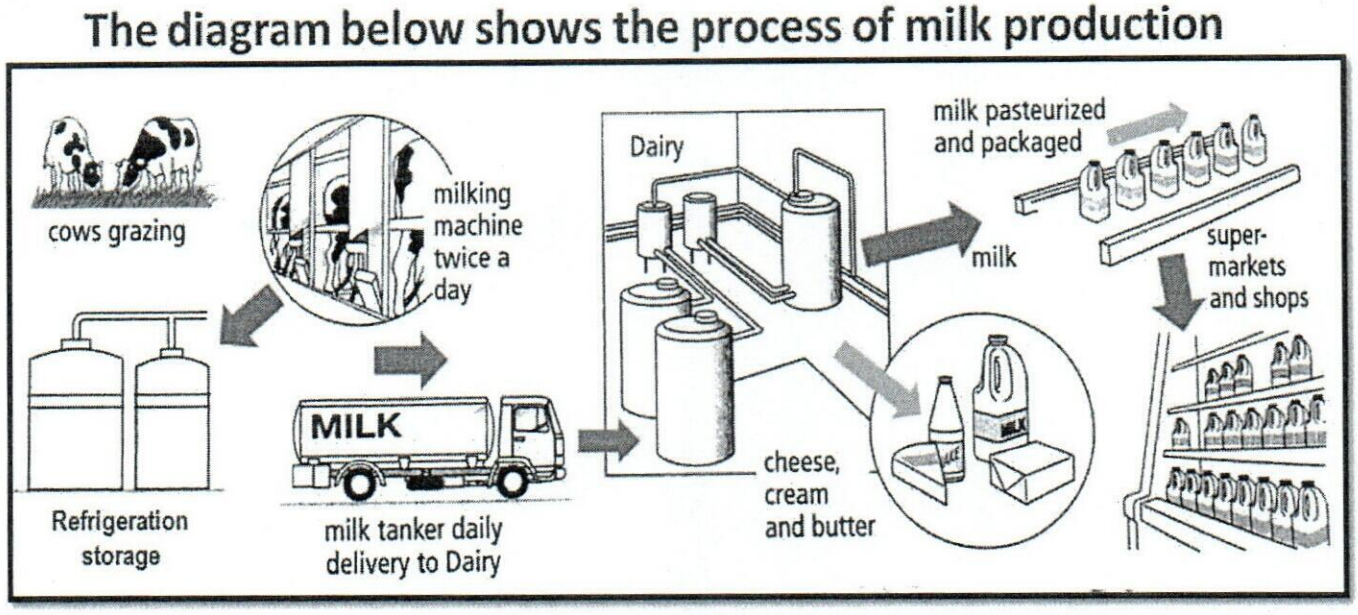
INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 Marks)**

The diagram below shows the production and processing of milk and dairy for commercial sale. Summarise the information by selecting and reporting the main features, and make comparisons where relevant. (Use 50 – 75 words).

* Use words like, first of all, then, after, secondly, finally, etc…



Question 02 **(100 Marks)**

Some believe that is the responsibility of people to take care of the environment. Others say it is the government that should take care of the environment. Discuss both views and state your opinion. (Use 100 – 150 words)

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1153 - English
1st Year 1st Semester
Batch 03
End Semester SEQ Examination

Date: 12th June 2024
Time: 09.00 am – 12.00 pm – Three Hours

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 Marks)**

Change the following sentences into passive Voice.

1. Workers have planted the trees. **(10 Marks)**
   .....
2. Somebody has drunk all the milk! **(10 Marks)**
   .....
3. Frank feeds the dogs. **(10 Marks)**
   .....
4. Someone was building the Tree House. **(10 Marks)**
   .....
5. My mother is watering the plants. **(10 Marks)**
   .....
6. They will open a restaurant next year. **(10 Marks)**
   .....
7. They have not read the book. **(10 Marks)**
   .....
8. By next year the students will have studied the passive. **(10 Marks)**
   .....
9. He had written three books before 1867. **(10 Marks)**
   .....
10. The secretary of the committee delivered the vote of thanks. **(10 Marks)**
    .....

Question 02 **(100 Marks)**

Fill in the each blank with the correct form of the verb given in the brackets.

1. Direct: He said, "I am going to the market" **(20 Marks)**

   .....

2. Direct: He asked, "Will you have a seat?" **(20 Marks)**

   .....

3. Direct: She said, "I can help you with your project." **(20 Marks)**

   .....

4. Direct: She asked, "Do you like Pizza?" **(20 Marks)**

   .....

5. Direct: Mary asked, "Why are you late?" **(20 Marks)**

   .....

Question 03 **(100 Marks)**

Choose the most appropriate answer.

1. **China is the most _____ country in the world.** **(20 Marks)**
   1. popular
   2. populous
   3. populate
   4. popularized
2. **The first film on gypsies was such a success that now they are going to make a _____.** **(20 Marks)**
   1. serial
   2. sequence
   3. sequel
   4. sequential
3. **It is necessary to _____ standards are maintained.** **(20 Marks)**
   1. insure
   2. sure
   3. ensure
   4. control
4. **Many of the city's narrow streets have been _____.** **(20 Marks)**
   1. distinguished
   2. widened
   3. doubled
   4. rehabilitated
5. **He is very_____; he believes anything.** **(20 Marks)**
   1. fallible
   2. gullible
   3. sensible
   4. credible

Question 04 **(100 Marks)**

Fill in each blank with the correct form of the verb given in the brackets. First one is done for you.

Last summer, my family and I (decide) (1) **decided** to take a trip to the mountains. We (leave) (2) _____ early in the morning to avoid traffic. By the time we (reach)(3) _____ the base of the mountain, the sun (rise) (4) _____, and the view was breathtaking. We (spend) (5) _____ the entire day hiking and exploring the trails. While we (climb) (6) _____ a steep path, we (encounter) (7) _____ a group of deer grazing nearby. It (be) (8) _____ such a peaceful sight. After we (return) (9) _____ to our campsite, we (sit) (10)_____ around the fire, roasting marshmallows and sharing stories. That night, I (fall) (11) _____ asleep under a sky full of stars, feeling completely content.

Question 05 **(100 Marks)**

Where on Earth are you? Navigators use lines of latitude and lines of longitude to locate places. Lines of latitude run east and west around Earth. On a map or globe, these lines appear as running sideways or horizontally. Lines of longitude run north and south around Earth. These lines go up and down or vertically on a map or globe. These lines create an imaginary graph paper on the Earth. They make it possible to find an absolute, or exact, location on Earth. They even allow us to give an absolute location to a place out in the middle of the ocean.

Lines of latitude tell us how far north or south of the Equator we are. Sailors have used primitive navigation tools, like astrolabes, since ancient times. The astrolabe uses the sun and stars to find an approximate location. Using such tools, they have been able to approximate their distance from the equator. Although their instruments may not have been the high quality we have now, they were incredibly accurate for their time.

Lines of longitude tell us how far east or west of the prime meridian we are. Sailors constantly looked for new ways to increase their navigation skills. Still, it wasn't until the 18th century they were able to measure degrees of longitude. They would have been very envious of the technology available to us today. When we use lines of latitude and longitude together, we can get a very precise location. fI we want to identify the absolute location of a point, we look at where the latitude and longitude lines cross nearest to that point. We use the coordinates for that point as its address. Many maps today include degrees of latitude and longitude.

Another tool that helps us navigate is the magnetic compass. The **magnetic compass** was developed in China. In medieval times, sailors brought to from China to Europe during their regular trade **expeditions** to Asia. This technology made worldwide travel easier and encouraged more exploration.

1. What is the function of lines of latitude and to allow us to find an absolute longitude?..... **(20 Marks)**

   .....

   .....

2. Which imaginary lines run north and south?..... **(10 Marks)**

3. Which imaginary lines are based on the Equator?..... **(10 Marks)**

4. What is meant by an absolute location? ..... **(20 Marks)**

   .....

5. In your opinion, which invention was more important: the astrolabe or the magnetic compass? Defend your answer..... **(40 Marks)**

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Question 06 **(100 Marks)**

"Some people argue that technological interventions, such as mobile phones, are making people socially less interactive". Do you agree or disagree? Use 75 – 100 words.

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1143 – Laboratory Safety & Ethics
1st Year 1st Semester
Batch 03
End Semester SEQ Examination

Date : 10th of June 2024
Time : 09.00 am – 12.00 pm (Three Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

QUESTION 01 **(100 marks)**

1.1. Mention the laboratory personal responsible to maintain safety in the laboratory. (20 marks)

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1.2. State four (04) universal precautions. (20 marks)

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1.3. Discuss the code of professional conduct that should be followed by medical laboratory personal. (30 marks)

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1.4. Discuss the importance of immunizing the laboratory staff. (30 marks)

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QUESTION 02 **(100 marks)**

2.1. Define Personal protective equipments. (20 marks)

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2.2. Name the personal protective equipments that you should use when performing the following experiments. (20 marks)

i. When drawing blood from a patient

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ii. When handling a sputum sample

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iii. When handling a combustible chemical

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iv. When dealing with a carcinogenic chemical

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2.3. Briefly discuss the factors which influence the selection of personal protective equipments. (30 marks)

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2.4. Draw a flow chart to denote the proper method of removing gloves after handling a hazardous chemical. (30 marks)

QUESTION 03 **(100 marks)**

3.1. State the four (04) main types of hazards present in the laboratory. (10 marks)

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3.2. Define Biohazard. (15 marks)

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3.3. Briefly discuss the steps that should be taken to prevent electric hazards. (35 marks)

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3.4.Mention the precautions that should be taken when handling the following. (40 marks)

Name of the laboratory items	Precautions that should be taken
Biohazard	1. ..... 2.....
Carcinogen	1. ..... 2.....
Oxidizing chemical	1. ..... 2.....
Corrosive chemical	1. ..... 2.....

QUESTION 04 **(100 marks)**

4.1. State the main three (03) categories of laboratory waste. (15 marks)

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4.2. Mention two (02) waste types decontaminated by the following methods. (30 marks)

Method of disposal	Name of the laboratory waste
Chemical disinfection	1. ..... 2.....
Autoclaving	1. ..... 2.....
Incineration	1. ..... 2.....

4.3. Draw a flow chart to denote the standard procedure of transporting laboratory waste. (20 marks)

4.4. Briefly discuss the importance of waste management in microbiology laboratory. (30 marks)

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QUESTION 05 **(100 marks)**

5.1. State the main types of radiation. (15 marks)

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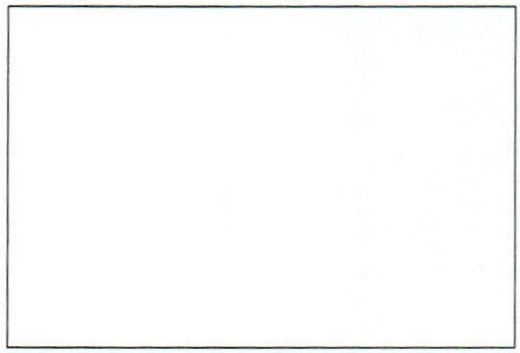
5.2. Denote the caution symbol used to represent a radioactive material. (15 marks)



5.3. Describe the biological effects of radiation exposure. (30 marks)

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5.4. Describe the standard practices followed in laboratories to safeguard the laboratory staff from hazardous effects of radiation. (30 marks)

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QUESTION 06 **(100 marks)**

6.1.Mention the biosafety level that should be maintained in the laboratory when working with following organisms. (30 marks)

i. Influenza virus - .....

ii. Ebloa virus - .....

iii. *Mycobacterium tuberculosis* - .....

6.2. Briefly describe the importance of maintaining biosafety in the laboratory. (35 marks)

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6.3. Differentiate between biosafety cabinet class I and III. (35 marks)

Class I	Class III
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Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

Introduction To Microbiology – HD 1123

1st Year 1st Semester -End Examination SEQ -Batch 03

Date : 2024.06.05
Time : 9. 00 A.M – 12.00 P.M (3 HOURS)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink

QUESTION 01 **(100 Marks)**

1.1 Classify the diverse group of microorganisms. (25 marks)

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1.2 Mention the types of microscopes use in microbiology laboratory. (25 marks)

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1.3 Briefly describe the terms of magnification and resolution of the microscope. (25 marks)

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1.4 Briefly describe the importance of phase contrast microscope and dark field microscope. (25 marks)

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QUESTION 02 **(100 Marks)**

2.1 Mention five types of staining methods use in microbiology laboratory. (25 marks)

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2.2 Briefly describe the principle of gram staining method. (25 marks)

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2.3 Briefly describe the phases of growth in bacterial growth curve. (25 marks)

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2.4 Briefly describe the use of enrichment media, selective media and differential media. (25 marks)

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QUESTION 03 **(100 Marks)**

3.1 Mention five medically important gram-positive cocci microorganisms. (25 marks)

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3.2 Briefly describe the general characteristics of *Staphylococcus spp.* (25 marks)

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3.3 Briefly describe two diagnostic methods of *Staphylococcus spp.* (25 marks)

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3.4 Briefly describe the characteristics of any two medically important gram-negative microorganisms. (25 marks)

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QUESTION 04 **(100 Marks)**

4.1 Define the terms of resident flora and transient flora. (25 marks)

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4.2 State the major factors in the development of bacterial infection. (25 marks)

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4.3 Briefly describe the stages of process in bacterial infection and disease. (25 marks)

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4.4 Briefly describe the factors that weaken the host defenses and increase susceptibility to infection. (25 marks)

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QUESTION 05 **(100 Marks)**

5.1 Briefly outline the difference between plasmid DNA and chromosomal DNA. (25 marks)

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5.2 Mention the classification of plasmid by the ability to be transferred to other bacteria. (25 marks)

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5.3 Briefly describe the process of vertical gene transfer and horizontal gene transfer. (25 marks)

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5.4 Briefly describe the process of generalized transduction. (25 marks)

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QUESTION 06 **(100 Marks)**

6.1 State the properties of a virus. (25 marks)

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6.2 State the key stages of life cycle of a virus. (25 marks)

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6.3 Briefly describe the transmission methods of a virus into the host cell. (25 marks)

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6.4 Briefly describe the structure of a fungus. (25 marks)

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Faculty of Health Sciences

HD 1123 CHEMISTRY/ HD 1133 CHEMISTRY FOR BIOMEDICINE

1st Year 1st Semester

Batch 03

End Semester SEQ Examination

Date: 07th of June 2024
Time: 09.00 am – 12.00 pm - Three Hours

INSTRUCTIONS TO CANDIDATES Page
- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 marks)**

1. The initial concentrations of A and B are 0.15 M for this reaction, A + 2B → C. The rate constant k is 0.01 mol^{-2} dm^6 s^{-1}.

1.1 Write the rate equation of the reaction. (20 marks)

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1.2 Apart from the concentration, name two other factors that affect the rate of the reaction. (25 marks)

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1.3 What is the meaning of half-life in a chemical reaction? (30 marks)

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1.4 Find the half-life of A? (25 marks)

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Question 02 **(100 marks)**

2.1 Draw the Lewis structures of following molecules. (50 marks)

2.1.1 SF_6

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2.1.2 H_2O_2

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2.2 Figure out the shape and the geometry of the following molecules. (50 marks)

2.2.1 PH_3

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2.2.2 SF_6

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2.2.3 CCl_4

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2.2.4 ClO_4^-

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Question 03 **(100 marks)**

3.1 In an acidic solution, a solution of potassium dichromate (K_2CrO_4) is added to a solution containing iron (II) sulfa ($FeSO_4$). The reaction between K_2CrO_4 and $FeSO_4$ is a redox reaction.

3.1.1 Write the balanced redox equation for this reaction. Identify the oxidizing and reducing agents in the reaction (20 marks)

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3.1.2 If 35.0 mL of 0.200 M K_2CrO_4 solution is required to react completely with 25.0 mL of FeSO4 solution, wha the molarity of the FeSO4 solution? (20 marks)

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3.1.3 A student performed the reaction between K_2CrO_4 and $FeSO_4$ and obtained 3.20 g of $Fe_2(SO_4)_3$. Calculate th theoretical yield of $Fe_2(SO_4)_3$ and the percentage yield of the reaction. (30 marks)

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3.2. Draw the molecular orbital diagram of O_2. (30 marks)

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Question 04 **(100 marks)**

4.1 The names and formulae of three hydrocarbons in the same homologous series are:

Pentane C_5H_{12}

Hexane C_6H_{14}

Heptane C_7H_{16}

4.1.1 Write the next member in the series and its structural formula. (30 marks)

.....

4.2 Draw the structures for the following IUPAC names. (30 marks)

4.2.1 Propan -2-ol

.....

4.2.2 1,3- hexanediol

.....

4.2.3 2- butylcyclohexanol

.....

4.2.4 2-butanone

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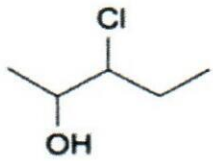
4.2.5 2,4,6-tribromophenol

.....

4.3 Write the IUPAC name and classification for the following compounds. (40 marks)

4.3.1



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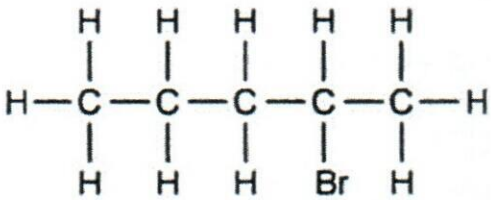
4.3.2



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Question 05 **(100 marks)**

5.1 Table 01 shows the melting and boiling points of some of the elements in group 17 and give the physical stat of each substance at 50°C. (30 marks)

Table 1

Element	Melting point in °C	Boiling point in °C
Fluorine	–220	–188
Chlorine	–101	–35
Bromine	–7	59

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5.2 Explain why 3rd ionization energy is large compare to the 1st and 2nd ionization energy of Barium (Ba) (30 marks)

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5.3 Write the balance reactions of Na, K and Mg with water. (20 marks)

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5.4 Briefly explain why the atomic radius increases down the group. (20 marks)

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Question 06 **(100 marks)**

6.1 The following questions are based on the Haber-Bosh process method.

6.1.1 What is the purpose of use of **Iron (Fe)** in this process? (30 marks)

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6.1.2 What is the procedure to separate ammonia from the nitrogen and hydrogen gasses in Haber-Bosh process (30 marks)

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6.2 State five requirements to be considered when establishing chemical industries. (40 marks)

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Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

Cell Biology – HD 1113

1st Year 1st Semester -End Examination SEQ -Batch 03

Date	:	**2024.06.03**
Time	:	**9. 00 A.M – 12.00 P.M (3 HOURS)**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink

QUESTION 01 **(100 Marks)**

1.1 Define the term of prokaryotic cell. (25 marks)

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1.2 Mention the structures present in eukaryotic cell. (25 marks)

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1.3 Compare and contrast the structures of eukaryotic and prokaryotic cells. (25 marks)

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1.4 Briefly describe the structure of prokaryotic cell. (25 marks)

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QUESTION 02 **(100 Marks)**

2.1 Define the term of cellular organelles. (25 marks)

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2.2 Mention the components of plasma membrane. (25 marks)

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2.3 Briefly describe the structure of biological membrane. (25 marks)

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2.4 Briefly describe the molecule transport mechanisms via plasma membrane. (25 marks)

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QUESTION 03 **(100 Marks)**

3.1 Mention the pathways of vesicular transport. (25 marks)

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3.2 Briefly describe the endocytosis and exocytosis pathways. (25 marks)

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3.3 State five importance of cytoskeleton present in eukaryotic cell. (25 marks)

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3.4 Briefly outline the structure of two types of fibers present in cytoskeleton. (25 marks)

QUESTION 04 **(100 Marks)**

4.1 State four types of cellular junctions present in eukaryotic cells. (25 marks)

4.2 Briefly state the function of each cellular junction mentioned in (4.1). (25 marks)

4.3 Draw a labeled diagram of the gap junction. (25 marks)

4.4 Briefly describe the importance of plasmodesmata. (25 marks)

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QUESTION 05 **(100 Marks)**

5.1 Define the terms of mitosis and meiosis in eukaryotic cells. (25 marks)

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5.2 State the stages of meiosis in eukaryotic cell. (25 marks)

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5.3 Compare and contrast mitosis and meiosis in cell divisions. (25 marks)

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5.4 Briefly describe the importance of meiosis in eukaryotic cell. (25 marks)

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QUESTION 06 **(100 Marks)**

6.1 State the key biomolecules present in a living cell. (25 marks)

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6.2 State five functions of macromolecules. (25 marks)

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6.3 Briefly describe the structure of DNA (deoxyribonucleic acid). (25 marks)

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6.4 Briefly describe the characteristics of saturated and unsaturated fatty acids. (25 marks)

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