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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 04
End Semester SEQ Examination

Date: 10th November 2025
Time: 09.00 am – 11.00 am – Two Hours

INSTRUCTIONS TO CANDIDATES

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

Question 01 **(100 Marks)**

Change the following sentences into passive Voice.

1.1	The chef is preparing a special dish for the guests tonight.	**(10 Marks)**
1.2	The teacher has given the students a challenging assignment.	**(10 Marks)**
1.3	Engineers will complete the bridge construction by next year.	**(10 Marks)**
1.4	Someone had stolen the valuable painting from the gallery last week.	**(10 Marks)**
1.5	The company is offering significant discounts during the festival season.	**(10 Marks)**
1.6	They are developing a new software that can detect cyber threats automatically.	**(10 Marks)**
1.7	The police have arrested several suspects in connection with the robbery.	**(10 Marks)**
1.8	People speak English in many countries around the world.	**(10 Marks)**
1.9	The manager will review all the project proposals tomorrow.	**(10 Marks)**
1.10	Researchers are conducting experiments to find a cure for the disease.	**(10 Marks)**

Question 02 **(100 Marks)**

A. Renewable energy is no longer just a futuristic concept; it has become a crucial part of the global energy mix. Innovations in solar panels, wind turbines, and battery storage systems are making it possible for countries and companies to reduce their reliance on fossil fuels. Engineers are experimenting with flexible solar panels, offshore wind farms, and more efficient lithium-ion batteries to make energy production cleaner and more reliable.

B. Traditionally, electricity generation depended on coal, oil, and natural gas. Power plants were often state-owned and required massive investment. However, in the last decade, private companies have entered

the energy sector, installing solar and wind farms and experimenting with new technologies. Governments are also providing subsidies and incentives to encourage private investment in clean energy.

C. One recent milestone was the launch of a large offshore wind farm by a private consortium. The turbines, controlled remotely via advanced software, are capable of generating electricity for over 500,000 homes. The success of this project has demonstrated that renewable energy can now compete with traditional power sources in efficiency and cost.

D. The drive toward renewable energy has several advantages. It reduces greenhouse gas emissions, limits dependence on imported fuels, and encourages technological innovation. By allowing private companies to participate, governments can free up public funds to invest in research on advanced energy storage and next-generation power grids.

E. Despite these opportunities, challenges remain. Renewable energy production is still weather-dependent, storage solutions are costly, and infrastructure for widespread use is limited. Investors are cautious, and only a few large companies dominate the market. There is also concern about whether renewable energy can meet global demand consistently without significant breakthroughs in technology.

F. Many experts argue that collaboration between governments, private companies, and research institutions is essential. By combining expertise and resources, the transition to renewable energy can be accelerated while mitigating risks. The path ahead may be uncertain, but the potential rewards for society and the environment are enormous.

Questions 1-6

The passage has six paragraphs labelled A-F. Which paragraph contains the following information? Write the correct letter A-F.

2.1. Private companies helping to reduce government spending on energy research .....
2.2. A recent project showing renewable energy can be efficient and reliable .....
2.3. Advances in technology making renewable energy more viable .....
2.4. Challenges and limitations of renewable energy production .....
2.5. Historical reliance on fossil fuels and state-owned energy projects .....
2.6. The importance of collaboration for future energy development .....

Choose the correct letter, A, B, C, or D.

2.7. Which of the following is NOT mentioned as a recent renewable energy innovation?
A. Flexible solar panels
B. Offshore wind turbines
C. High-efficiency coal plants
D. Lithium-ion batteries

2.8. Why was the offshore wind farm project significant?
A. It was the first government-run energy project.
B. It proved that renewable energy can be cost-competitive.

C. It required no software or automation.
D. It relied entirely on fossil fuels.

2.9. What is one benefit of allowing private companies into the renewable energy sector?
A. It eliminates the need for technological innovation.
B. It frees up public funds for research on advanced energy solutions.
C. It guarantees that renewable energy will always meet demand.
D. It ensures that only one company dominates the market.

2.10. According to the passage, the best way to advance renewable energy is:
A. Government-only investment
B. Private-only investment
C. Collaboration between governments, private companies, and research institutions
D. Relying on fossil fuels

Question 03 **(100 Marks)**

You are the Secretary of the Student Council at your school/college. Write an official letter to the Principal requesting permission to organize a blood donation campaign on the school/college premises.

Include the purpose of the campaign, the proposed date, and any support you may need from the administration.

Question 04 **(100 Marks)**

Write an essay on "The Effect of Smartphones on Academic Performance." Use 200 - 250 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 4
End Semester Assignment Examination

Date: 10.11.2025
Time: 1.30 pm – 2.30 pm – One Hour

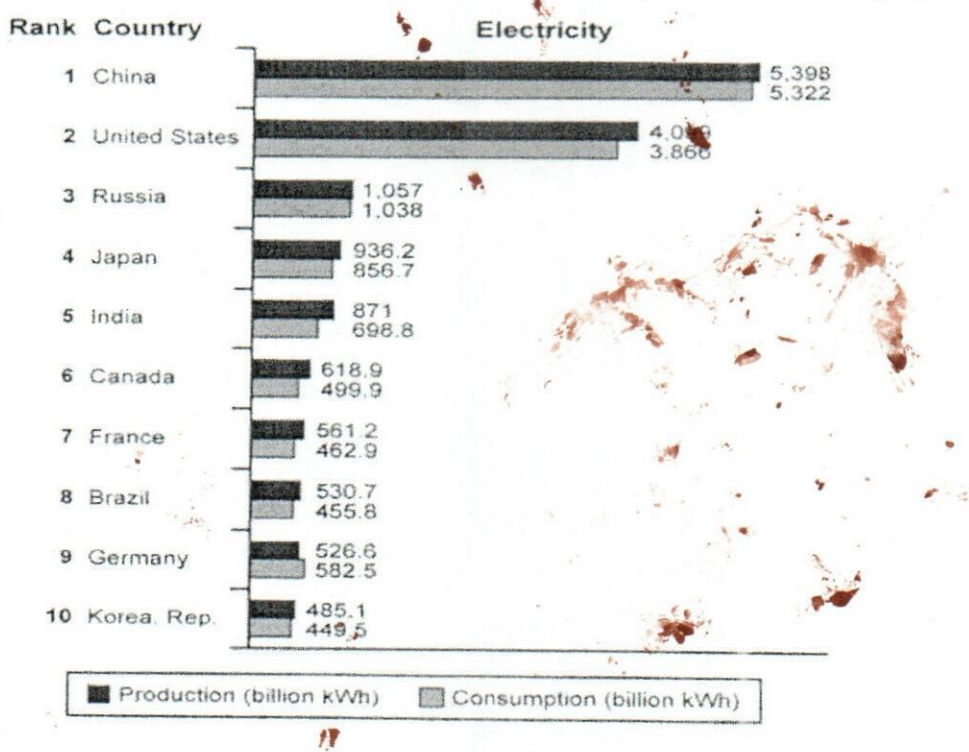
INSTRUCTIONS TO CANDIDATES

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

Question 01 **(100 Marks)**

The bar chart below shows the top ten countries for the production and consumption of electricity in 2014.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant. (Use 150 - 175 words)



Question 02 **(100 Marks)**

"Some people think universities should focus on practical skills for employment, while others believe theoretical knowledge is more important. Discuss both views and give your opinion".

(Use 200 - 250 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 04
End Semester Assignment Examination

INDEX NUMBER : .....

Date : 06th of November 2025
Time : 01.30 p.m.– 02.30 p.m. (One Hour)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- You should write **answers** legibly in black or blue ink.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 marks)**

During a routine experiment in a Biomedical research laboratory, a graduate student accidentally spills a strong acid on the bench. The spill spreads near other chemical containers, and the student is unsure of the correct steps to follow.

1.1. Identify the immediate actions the student should take to ensure personal safety and prevent further hazards. (30 marks)
1.2. Draw a flow chart of the procedure for safely cleaning up the chemical spill, including the materials and personal protective equipment (PPE) required. (30 marks)
1.3. State the role of laboratory safety documentation and reporting in preventing similar accidents in the future. (40 marks)

QUESTION 02 **(100 marks)**

A new Biomedical laboratory is being set up at your institution. As part of the safety committee, you have been asked to design a comprehensive laboratory safety plan for the facility.

2.1. Identify and state four major hazards that could be present in the laboratory. (30 marks)
2.2. Propose preventive measures and control strategies for each of the hazards you identified. (40 marks)
2.3. State the importance on safety training for the laboratory personnel to ensure compliance with safety protocols. (30 marks)

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CINEC CAMPUS
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 04

Date : 31st of October 2025
Time : 9. 00 A.M – 11.00 A.M (2 Hours)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 01 **(100 Marks)**

1.1 State the characteristics of viruses. (25 marks)
1.2 State the routes of transmission of viruses, providing suitable examples. (25 marks)
1.3 Outline the characteristics of fungi in comparison to viruses. (25 marks)
1.4 State the methods of reproduction in fungal organisms. (25 marks)

QUESTION 02 **(100 Marks)**

2.1 Define the term "plasmid" find in the bacterial cell. (25 marks)
2.2 Illustrate and label a typical bacterial cell structure. (25 marks)
2.3 Outline the process of vertical gene transfer and horizontal gene transfer mechanisms. (25 marks)
2.4 Briefly state the mechanism of bacterial transformation process in horizontal gene transfer. (25 marks)

QUESTION 03 **(100 Marks)**

3.1 Define the term "generation time" of microorganisms. (25 marks)
3.2 A biomedical student performs an enrichment culture of a selected microorganism. The starting number of microorganisms (N) is 100, and the generation time is 30 minutes. Calculate the number of cells that will be produced after a 3-hour period in the enrichment culture medium. (25 marks)
3.3 Illustrate the bacterial growth curve and label each phase of the curve. (25 marks)
3.4 Outline the uses of selective and differential culture media in the laboratory. (25 marks)

QUESTION 04 **(100 Marks)**

4.1 Illustrate the identification key for gram-positive microorganisms used in the laboratory. (25 marks)
4.2 State the principle of the catalase test used for the identification of *Staphylococcus aureus*. (25 marks)
4.3 Outline the characteristics of the *Staphylococcus aureus* microorganism. (25 marks)
4.4 Compare and contrast gram-positive and gram-negative microorganisms. (25 marks)

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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 04
End Semester SEQ Examination

INDEX NUMBER : .....

Date : 06th of November 2025
Time : 09.00 a.m.– 11.00 a.m. (Two Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **FOUR** questions.
- Answer **ALL** questions.
- You should write **answers** legibly in black or blue ink.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 marks)**

1.1. State the importance of laboratory safety in a biomedical research environment. (20 marks)

1.2. List five major causes of laboratory accidents. (25 marks)

1.3. Outline the steps that should be taken immediately following a chemical spill on the laboratory bench. (25 marks)

1.4. State the role of a Laboratory Safety Officer in ensuring compliance with institutional safety regulations. (30 marks)

QUESTION 02 **(100 marks)**

2.1. What are the four biosafety levels used in laboratories ? (30 marks)

2.2. State the appropriate biosafety level for the following scenarios and justify your answer:

a) Handling Mycobacterium tuberculosis cultures (10 marks)
b) Working with HIV-infected human blood samples (10 marks)
c) Performing genetic modification of non-pathogenic *E. coli* (10 marks)
d) Handling samples suspected to contain the Ebola virus (10 marks)

2.3. Differentiate two key differences between biosafety level 2 and biosafety level 3 laboratories. (30 marks)

QUESTION 03 **(100 marks)**

3.1. Draw a flow chart to illustrate the steps involved in the disposal of liquid chemical waste generated in a biomedical laboratory. (30 marks)

3.2. Complete the following table to differentiate between sharp waste and infectious waste. (20 marks)

Type of waste	Sharp waste	Infectious waste
Example		
Disposal Method		

3.3. List five (05) possible environmental or health hazards that may arise from improper laboratory waste disposal. (20 marks)

3.4. State the role of labeling and documentation in ensuring safe and traceable laboratory waste management. (30 marks)

QUESTION 04 **(100 marks)**

4.1. Define Personal Protective Equipment (PPE). (10 marks)

4.2. Identify and state the appropriate PPE for the following situations.

a) Handling infectious biological samples (10 marks)
b) Working with volatile organic solvents (10 marks)
c) Operating a centrifuge (10 marks)
d) Cleaning up a chemical spill (10 marks)

4.3. Draw a flow chart to denote the correct procedure for donning (putting on) and doffing (removing) PPE to prevent contamination. (25 marks)

4.4. What are the limitations of PPE and the factors that can reduce its effectiveness? (25 marks)

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Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
Cell Biology – HD 1113
1st Year 1st Semester -End Examination SEQ -Batch 04

Date	:	**29th of October 2025**
Time	:	**9. 00 A.M – 11.00 A.M (2 HOURS)**

INSTRUCTIONS TO CANDIDATES

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

QUESTION 01 **(100 Marks)**

1.1 Define the complementary base pairing theory in DNA molecule. (20 marks)

1.2 Illustrate the structure of the nucleotide molecule. (20 marks)

1.3 Illustrate the mechanism of polymerization of the DNA molecule. (20 marks)

1.4 Write the short notes on following topics.

1.4.1 Gene. (20 marks)

1.4.2 Chromosome. (20 marks)

QUESTION 02 **(100 Marks)**

2.1 Define the active transport mechanism via cell membrane. (25 marks)

2.2 State the components of cell membrane. (25 marks)

2.3 A biomedical student state that "the cell membrane is a permeable membrane which let all the molecules to pass through.". State your opinion on given statement. (25 marks)

2.4 Outline the function of the membrane proteins present in the cell membrane. (25 marks)

QUESTION 03 **(100 Marks)**

3.1 Define the term cellular junction find in the cell. (25 marks)

3.2 State the functions of the tight junction present in cells. (25 marks)

3.3 How the meiosis process generate the variations? (25 marks)

3.4 Compare and contrast meiosis I and meiosis II. (25 marks)

QUESTION 04 **(100 Marks)**

4.1 State the building blocks of given molecules.

4.1.1 Fatty acids (05 marks)

4.1.2 Waxes (05 marks)

4.1.3 Triglycerides (05 marks)

4.14 Phospholipids (05 marks)

4.1.5 Steroids (05 marks)

4.2 Differentiate the structures of unsaturated and saturated fatty acids. (25 marks)

4.3 State the functions of triglycerides in the body. (25 marks)

4.4 Briefly describe the function of HDL and LDL in transporting cholesterols. (25 marks)

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

Cell Biology – HD 1113

1st Year 1st Semester -End Examination Assignment -Batch 04

Date	:	**29th of October 2025**
Time	:	**1.30 P.M – 2.30 P.M (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)**

1.1 Illustrate and label typical bacterial cell structure. (25 marks)

1.2 Compare and contrast the animal cell and plant cell structure. (25 marks)

1.3 Outline a practical method in observation of animal cells. (25 marks)

1.4 Outline a practical method in observation of plant cells. (25 marks)

QUESTION 02 **(100 Marks)**

2.1 State the types of cell junctions. (25 marks)

2.2 Illustrate and label the structure of gap junction. (25 marks)

2.3 Illustrate and label the types of endocytosis pathways. (25 marks)

2.4 Illustrate a flow chart on mitosis pathway. (25 marks)

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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 03B
End Semester SEQ Examination

INDEX NUMBER : .....

Date : 09th of December 2024
Time : 09.00 a.m.– 12.00 p.m. (Three Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write **answers** legibly in black or blue ink.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 Marks)**

1.1. List the **four** types of biosafety levels. (20 marks)

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1.2. Mention **three** laboratory practices to minimize the risk of infection when handling pathogens. (30 marks)

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1.3. Draw a poster illustrating key laboratory safety practices. (50 marks)

QUESTION 02 **(100 Marks)**

2.1. What is personal protective equipment (PPE) ? (20 marks)

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2.2. Identify the appropriate PPE for the following instances.

a) Disposing infectious materials (10 marks)

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b) Handling corrosive substances (10 marks)

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c) Obtaining a nasal swab (10 marks)

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d) Administering an intravenous injection (10 marks)

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c) Handling a flammable substance (10 marks)

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2.3. Differentiate latex gloves and nitrile gloves. (30 marks)

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QUESTION 03 **(100 Marks)**

3.1. Provide **four** examples for biohazardous laboratory waste. (20 marks)

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3.2. Draw a flowchart to denote the process of discarding hazardous waste in a biomedical lab.
(40 marks)

3.3. Briefly describe the hazardous effects that could arise if laboratory waste is not properly discarded. (40 marks)

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QUESTION 04 **(100 Marks)**

4.1. Write short notes on the following.

4.1.1. The importance of immunizing laboratory staff. (30 marks)

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4.1.2. Class III biosafety cabinets (30 marks)

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4.1.3. Universal precautions (40 marks)

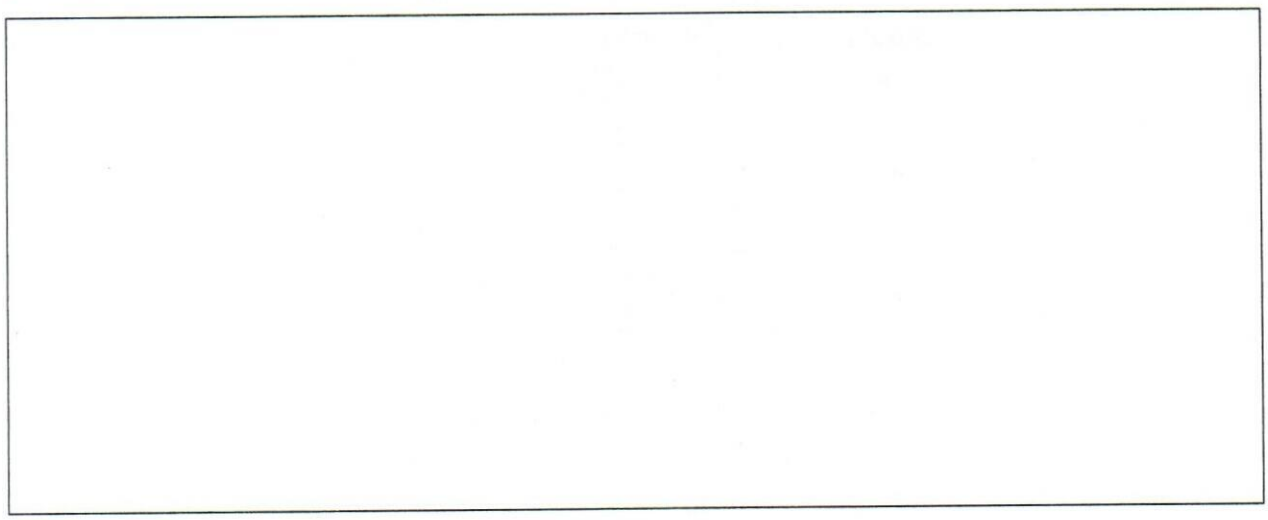
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QUESTION 05 **(100 Marks)**

5.1. Identify the main types of laboratory radiation. (20 marks)

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5.2. Draw the radioactive hazard symbol. (20 marks)



5.3. Write short notes on the following.

a) Radiation-induced health risks (30 marks)

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b) Preventive measures to protect from radiation hazards (30 marks)

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QUESTION 06 **(100 Marks)**

6.1. State **five** examples of chemical hazards commonly encountered in laboratories. (25 marks)

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6.2. Mention **two** safety measures each for handling the following hazardous chemicals.

a) Biohazard (10 marks)

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b) Flammable chemical (10 marks)

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c) Corrosive substance (10 marks)

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d) Reactive material (10 marks)

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6.3. State **three** incidence which could lead to the occurrence of an electrical hazard in the laboratory. (15 marks)

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6.4. List **four** fire prevention strategies in a laboratory setting. (20 marks)

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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

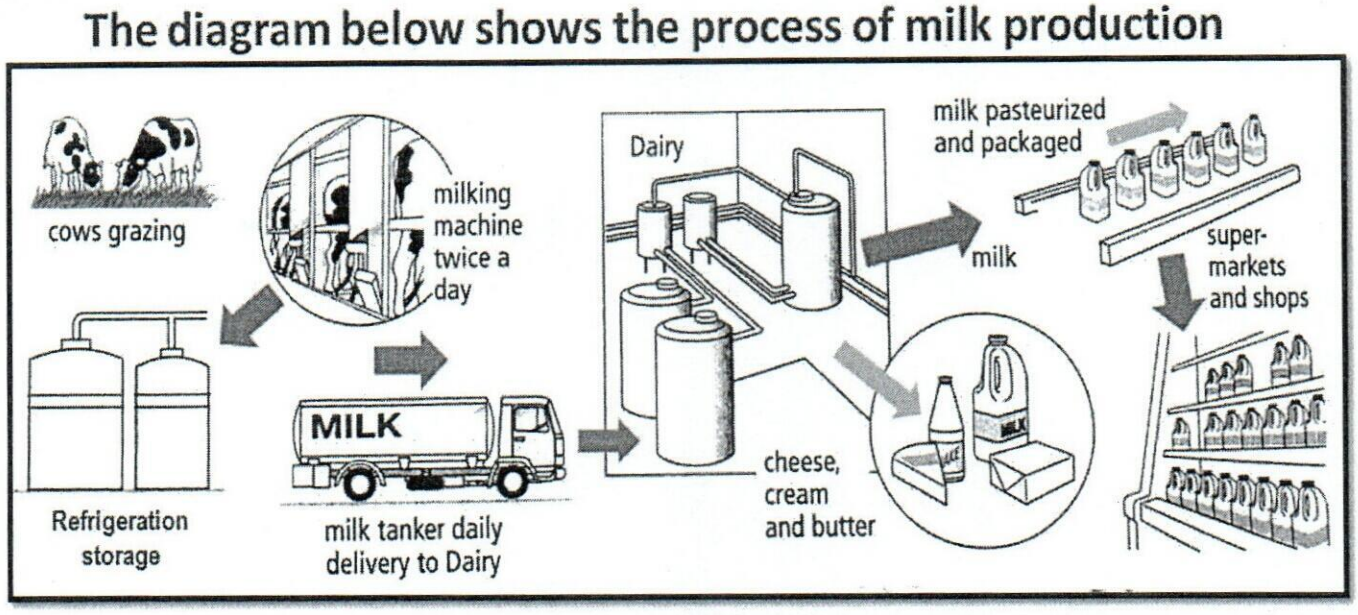
INSTRUCTIONS TO CANDIDATES

- 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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Library

Examination Department

10 JUN 2024

CINEC Campus, Sri Lanka

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

.....

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)

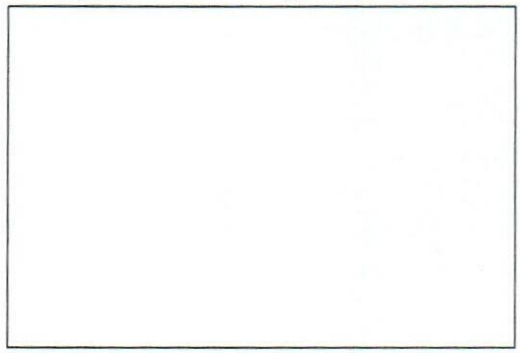
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5.2. Denote the caution symbol used to represent a radioactive material. (15 marks)



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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Examination Department
07 JUN 2024
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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)

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

4.2.1 Propan -2-ol

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4.2.2 1,3- hexanediol

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4.2.3 2- butylcyclohexanol

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4.2.4 2-butanone

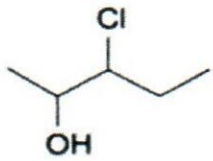
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4.2.5 2,4,6-tribromophenol

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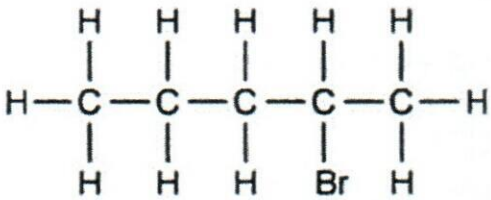
4.3 Write the IUPAC name and classification for the following compounds. (40 marks)

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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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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Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1153 – English
1st Year 1st Semester
Batch 02
End Semester Assignment Examination

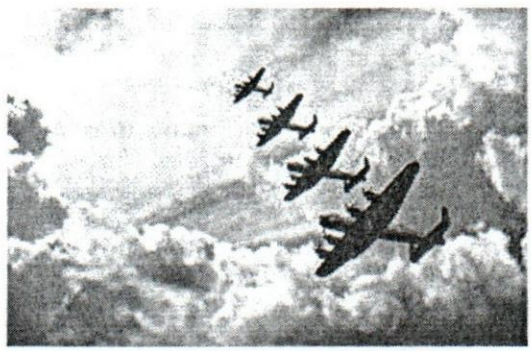
Date : 29th of May 2023
Time : 01.30 pm – 02.30 pm (One Hour)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 01 **(100 marks)**

Read the following passage on World War II and answer the questions based on it. (100 marks)



World War II was a global conflict that lasted from 1939 to 1945. The war involved the majority of the world's nations, including all of the great powers, organized into two opposing military alliances: the Allies and the Axis powers. The war had a profound **impact** on the world, including the loss of millions of lives and the reshaping of global politics.

The war began on September 1, 1939, when Germany, under the leadership of Adolf Hitler, invaded Poland. This **prompted** Britain and France to declare war on Germany. Over the next several years, the Axis powers, which included Germany, Italy, and Japan, made significant gains, capturing much of Europe and Asia. However, the tide of the war turned in favor of the Allies, which included the United States, the United Kingdom, and the Soviet Union, after the Battle of

Stalingrad in 1943. The Allies won a series of key battles, including the Battle of Stalingrad and the Battle of Midway.

In 1944, the Allies **launched** a massive invasion of Nazi-occupied Europe, known as D-Day. This operation marked a turning point in the war and led to the eventual defeat of Germany. The war in Europe ended on May 8, 1945, when Germany surrendered unconditionally to the Allies.

The war in Asia, however, continued until August 15, 1945, when Japan surrendered after the atomic bombings of Hiroshima and Nagasaki. These bombings remain the only use of nuclear weapons in warfare to this day.

World War II saw significant technological advancements in weaponry and military tactics. The war was fought on multiple fronts, including land, sea, and air. The development of new weapons, such as tanks, aircraft carriers, and atomic bombs, made the war more destructive than any previous **conflict**.

The **aftermath** of World War II had a significant impact on the world. The United States emerged as a superpower, and the war led to the formation of the United Nations, an international organization aimed at promoting peace and cooperation among nations.

1. When did the World War II begin and end?
2. Which countries made up the Axis powers?
3. Which countries were included in the Allied powers?
4. What was the main reason for this war to start?
5. What can be considered as the turning point in the war in Europe?
6. When did the war in Asia end and how did it end?
7. What are the fronts where the war continued?
8. What are some of the technological advancements in weaponry during the World War II?
9. What are the outcomes of the World War II?
10. Write the meanings of the bold printed words as they appear in the text:

    a. **Impact**:
    b. **Prompted**:
    c. **Launched:**
    d. **Conflict:**
    e. **Aftermath:**

QUESTION 02 **(100 marks)**

Write a paragraph of 100-120 words on your opinion about the impact of social media on human relationships. (100 marks)

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Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1153 – English
1st Year 1st Semester
Batch 02
End Semester SEQ Examination

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Learning Reccurse Centre - (Library)

Date : 29th of May 2023
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 **answers in lined papers** legibly in black or blue ink.

QUESTION 01 **(100 marks)**

1.1 Examine the following paragraph, and answer the questions based on it. (20 marks)

Evolution: Diversity and Adaptation

Evolution is a fundamental process that has shaped the diversity of life on Earth. All living beings, from the smallest microorganisms to the largest mammals, have evolved over millions of years in response to changing environmental conditions. **At its core, evolution is driven by the process of natural selection.** In this process, individuals with advantageous traits are more likely to survive and reproduce, passing those traits on to their offspring. Over time, this results in the accumulation of genetic changes that allow organisms to adapt to their environment and become better suited for survival. One of the most remarkable aspects of evolution in living beings is the diversity of life that has emerged from a common ancestry. From bacteria to birds, all living beings share a common genetic heritage and have evolved unique adaptations to their environments. One example of evolution in living beings is the development of flight in birds. Over time, certain species of birds evolved lightweight bodies, strong wings, and efficient respiratory systems that allowed them to fly through the air with ease. This adaptation has allowed birds to explore new habitats, find new sources of food, and escape predators. Overall, the process of evolution has resulted in an incredible diversity of life on Earth, and continues to shape the course of life on our planet. As the environment continues to change, living beings will continue to evolve and adapt in response, ensuring the ongoing survival of life on Earth.

a) What is the tense used in this paragraph? _____
b) What is the voice in the 3rd sentence which is highlighted in the above paragraph (Active/Passive)? _____

1.2 Identify the following elements from the passage. (80 marks)

c) A subject _____
d) An object _____
e) A verb _____
f) A transitive verb _____
g) An intransitive verb _____
h) A superlative adjective_____
i) A noun phrase _____
j) A preposition/ prepositional phrase _____

QUESTION 02 **(100 marks)**

2.1 Identify the voice (Active or Passive) of the following sentences and transform them into the opposite voice.

1) The lecturer will discuss this note tomorrow. (20 marks)
(Voice: _____)
2) The dog chased the cat. (20 marks)
(Voice: _____)
3) He greets everyone with a slight smile. (20 marks)
(Voice: _____)
4) The President of the committee has delivered the welcome speech. (20 marks)
(Voice: _____)
5) Nimali had taken a leave last Friday.
(Voice: _____) (20 marks)

QUESTION 03 **(100 marks)**

3.1 Convert the following sentences into indirect speech.

1) "You have done it very well", my friend told me. (20 marks)
2) "I have cleaned the room", she said to me. (20 marks)
3) The doctor asked the patient, "Are you drunk?" (20 marks)
4) "Stay inside the class until I come back", the teacher told to students. (20 marks)
5) "I will call you tomorrow", she said to her brother. (20 marks)

QUESTION 04 **(100 marks)**

4.1 Fill in each blank with the correct form of the verb given in brackets. (100 marks)

Yesterday I (1)_____ (get) up late, as I could not (2)_____ _____ (sleep) early on the night before yesterday. I (3)_____ _____ (feel) so bad and (4)_____ _____ (do) not (5)_____ _____ (want) to get out of the bed. It was a tiring week indeed. I (6)_____ _____ (check) my phone desperately to see if there (7)_____ _____ (be) any new messages. I (8)_____ _____ (hear) my mother (9)_____ _____(cook) in the kitchen. I finally (10)_____ _____ (decide)to get out of the bed and (11)_____ _____ (take) a walk. As I (12)_____ _____(walk), I (13)_____ _____ (see) a group of birds flying overhead. It (14)_____ _____ (be) a beautiful scene! Suddenly, I (15)_____ _____

(receive) a call from my best friend. He (16)_____ _____ (suggest) me to come over to his place. In the evening, he and I went (17)_____ _____ (see) a movie. The movie (18)_____ _____ (be) so good that we decided to (19)_____ _____ (grab) some dinner afterwards. While (20)_____ _____(have) dinner, we (21)_____ _____(talk) about the movie and how much we (22)_____ _____ (enjoy) it.

QUESTION 05 **(100 marks)**

Fill in the blanks with correct conjunctions from the word bank.

Until	**Although**	**But**	**If**	**While**	**After**
	And	**Because**	**Unless**	**For**	

1. I really like to go the party with you _____ I have to finish my homework first.
2. Her mother cooked in the kitchen_____ she was listening to music.
3. _____ she did not study well; she could pass the exam.
4. Nishani won't be able to attend the meeting_____ she completes his report.
5. We shall go to the beach _____the weather is good.
6. He will never do any homework _____ his mother buys him sweets.
7. He went to bed earlier yesterday _____ he had to be there at 6 a.m. today.
8. I went to the supermarket _____ bought vegetables.
9. She went home_____ she finished all her days work.
10. We could not play outside _____ it was raining heavily.

QUESTION 06 **(100 marks)**

"College education should be free for everyone" Do you agree? Write an essay on this topic highlighting your opinion on this statement. You may **use 100-150 words.**

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Faculty of Health Sciences
Higher Diploma in Biomedical Sciences
HD 1143 – Laboratory Safety & Ethics
1st Year 1st Semester
Batch 02
End Semester SEQ Examination

Date : 26th of May 2023
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 **answers** legibly in black or blue ink.

QUESTION 01 **(100 marks)**

1.1. What is known as laboratory acquired infections? (15 marks)
1.2. List **five** biohazards handled in the laboratory. (20 marks)
1.3. Discuss the safety practices that should be followed when handling sharps. (25 marks)
1.4. Describe five standard laboratory practices that should be carried out in the laboratory when handling biohazards. (40 marks)

QUESTION 02 **(100 marks)**

2.1. Mention **five** universal precautions. (15 marks)
2.2. Indicate **two** safety precautions that should be followed when conducting the following laboratory sessions.
  2.2.1. Handling a bloodborne pathogen (10 marks)
  2.2.2. Handling a corrosive chemical (10 marks)
  2.2.3. When drawing a blood sample (10 marks)
2.3. Compare and contrast surgical mask and N95 masks. (30 marks)
2.4. Draw a flow chart to denote the proper method of removing isolation gown after handling a hazardous chemical. (25 marks)

QUESTION 03 **(100 marks)**

3.1. Mention **two** micro-organisms handled in the biosafety level II. (10 marks)
3.2. Discuss the safety practices that should be followed in biosafety level II. (30 marks)
3.3. Compare and contrast biosafety cabinet class II and III. (30 marks)
3.4. Discuss the importance of maintaining biosafety in the laboratory. (30 marks)

QUESTION 04 **(100 marks)**

4.1. Define Radioactivity. (10 marks)
4.2. Draw a caution symbol used to represent a radioactive material. (15 marks)
4.3. Write short notes on the following
  4.3.1. Adverse effects of chronic radiation exposure. (25 marks)
  4.3.2. Radiation shielding. (25 marks)
  4.3.3. Radiation postings in the laboratory. (25 marks)

QUESTION 05 **(100 marks)**

5.1. Mention the general contents in a material safety data sheet. (25 marks)
5.2.Describe the general precautions you have to follow when using chemicals at the laboratory. (30 marks)
5.3. Discuss the precautions that should be taken to prevent fire hazards. (25 marks)

5.4. Draw a poster to denote the steps that should be carried out to prevent electric hazards. (20 marks)

QUESTION 06 **(100 marks)**

6.1. Mention **three** methods of decontamination followed in the biomedical laboratory. (15 marks)
6.2. Describe the incineration process. (20 marks)
6.3. Complete the following table by indicating the method of decontamination techniques followed. (40 marks)

Laboratory items	Method of decontamination
a. Lancets	
b. Microscopic slides	
c. Contaminated cotton	
d. Urine samples	

6.4. Draw a flow chart to denote the steps that need to be followed when discarding microbiology laboratory waste. (25 marks)

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Science
HD 1123 – Introduction to microbiology
SEQ Examination - 1st year 1st Semester – Batch 02

Date	:	**24th May 2022**
Time	:	**9.00 a.m. to 12.00 p.m.**

INSTRUCTIONS TO CANDIDATES

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

Question 01 **(100 marks)**

1.1. Compare and contrast simple and differential staining with examples. (30 marks)

1.2. Mention the stains used for following bacterial staining.

1.2.1. Endospore staining
1.2.2. Flagella staining
1.2.3. Acid-fast staining (30 marks)

1.3. Describe the reason for observing the Acid-Fast bacterial cells in red color after Acid-fast staining. (40 marks)

Question 02 **(100 marks)**

2.1. A scientist wanted to identify the microorganisms present in a water sample taken from a pond. Therefore he spread 0.1 mL of the water sample on Nutrient Agar medium. For doing this he used many laboratory instruments.

a) State whether he had followed **"sterilization" or "disinfection"** for each of item mentioned below.
b) And mention the most **appropriate method** that he can use to achieve sterilization /disinfection of each item accordingly.

2.1.1. Nutrient Agar medium
2.1.2. Petri dishes
2.1.3. Working bench
2.1.4. Inoculation loop
2.1.5. Glass spreader (75 marks)

2.2. Mention key differences between sterilization and disinfection in microbiology. (25 marks)

Question 03 **(100 marks)**

3.1. State an example for each culture media type indicated below.
3.1.1. Enrichment media
3.1.2. Selective media
3.1.3. Differential media (30 Marks)

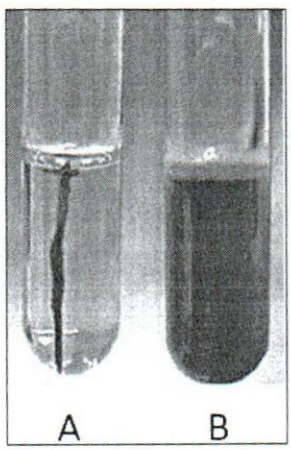
3.3. Draw the graphical representation and describe on phases of growth in the "bacterial growth curve" (70 Marks)

Question 04 **(100 marks**

4.1 Mention different methods of transmission of viruses with examples. (25 marks)
4.2 Describe the pathogenesis, complication of ***Varicella zoster***. (30 marks)
4.3 Describe the viral replication within a host cell. (35 marks)
4.4 State the diagnosis test used for viruses. (10 marks)

Question 05 **(100 marks)**

5.1 Identify the following results of motility test and describe the characters of the microorganisms in tube A & B. (40 marks)



5.2 State the factors that weakens host defence system and increase the susceptibility of infection. (20 marks)

5.3 Describe the process of development of microbial infection within a host. (30 marks)
5.4 Differentiate obligate aerobes and facultative anaerobes. (10 marks)

Question 06 **(100 marks)**

Describe the bacterial morphology, identification characteristics and the diseases caused by following organisms. (100 marks)

6.1 ***Neisseria gonorrheae*** (25 marks)
6.2 ***Pseudomonas aeruginosa*** (25 marks)
6.3 ***Salmonella shigella*** (25 marks)
6.4 ***Escherichia coli*** (25 marks)

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CINEC CAMPUS
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Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

CELL BIOLOGY – HD 1113

1st YEAR 1st SEMESTER -END EXAMINATION SEQ -BATCH 02

Date	:	**2023-05-23**
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 "cell". (10 marks)

1.2 Draw a labelled diagram of basic structure of prokaryote. (20 marks)

1.3 Compare and contrast the structures of eukaryotic and prokaryotic cells. (30 marks)

1.4 Describe the structure of animal eukaryotic cell. (40 marks)

QUESTION 02 **(100 Marks)**

2.1 Define the term of biological membrane. (20 marks)

2.2 Briefly explain the structure of biological membrane along with an illustration. (40 marks)

2.3 Write the short notes on the following. (40 marks)

2.3.1 Nucleus

2.3.2 Ribosome

2.3.3 Mitochondria

QUESTION 03 **(100 Marks)**

3.1 Define the term of cytoskeleton present in eukaryotic cell. (10 marks)

3.2 List three major components present in cytoskeleton. (15 marks)

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

3.4 Briefly explain the characteristics of two types of fibers present in cytoskeleton. (50 marks)

QUESTION 04 **(100 Marks)**

4.1 Define the term of cellular junctions present in eukaryotic cells. (10 marks)

4.2 State four types of cellular junctions present in eukaryotic cells. (20 marks)

4.3 Draw a labeled diagram of the plasmodesmata. (20 marks)

4.4 Briefly explain two types of cellular junctions mentioned in section (4.2). (50 marks)

QUESTION 05 **(100 Marks)**

5.1 Define the process of cell cycle in eukaryotic cells. (10 marks)

5.2 Briefly describe the stages of mitosis in eukaryotic cell. (50 marks)

5.3 Compare and contrast mitosis and meiosis cell divisions. (40 marks)

QUESTION 06 **(100 Marks)**

6.1 State four types of biomolecules present in living organism. (20 marks)

6.2 Briefly describe the structure of deoxyribonucleic acid (DNA). (40 marks)

6.3 Write the short notes on the following. (40 marks)

6.3.1 Triglyceride

6.3.2 Secondary structure of protein.

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD 1113 – Cell Biology

1st Year 1st Semester

Batch 01

End Semester SEQ Examination

INDEX NUMBER: .....

Date : 08th of October 2021
Time : 09.00 am – 12.00 pm (Three Hours) - To answer the questions
12.00 pm – 12.30 pm (30 minutes) - To upload & email the compiled answer script

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INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- The paper will be for three hours (9.00 am – 12.00 pm). You will be given an extra 30 minutes for submission.
- You should write **answers in lined papers** legibly in black or blue ink.
- You MUST write **your index number in the top right corner** of each answer script.
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- Photograph of your answer scripts must be taken by keeping them on a clear platform (e.g. table).
- Arrange the photographs of your answer script in a word document in an orderly manner, then convert the word document to a **PDF**.
- **Label the PDF: Your Index No – Cell Biology SEQ**
- **Upload** the labelled **PDF to LMS AND** also **email** the PDF to Fohs.exams@cinec.edu

QUESTION 01 **(100 marks)**

1.1. State the components of a typical prokaryotic cell. (10 marks)

1.2. Relate the role of nucleus in controlling the cell. (30 marks)

1.3. Write short notes on the following.

i. Golgi apparatus (20 marks)

ii. Chloroplast (20 marks)

1.4. Differentiate between rough and smooth endoplasmic reticulum. (20 marks)

QUESTION 02 **(100 marks)**

2.1. State the components of the plasma membrane. (10 marks)

2.2. Mention the factors which helps to maintain fluidity of the plasma membrane. (10 marks)

2.3. Relate the structure of plasma membrane in relation to its function. (35 marks)

2.4. Discuss the functions of the membrane proteins. (25 marks)

2.5. Differentiate between endocytosis and exocytosis. (20 marks)

QUESTION 03 **(100 marks)**

3.1. Define what is known as the cytoskeleton. (15 marks)

3.2. State the components of the cytoskeleton. (15 marks)

3.3. Compare and contrast between two main components of the cytoskeleton. (20 marks)

3.4. Justify the structure of flagella in relation to its function. (20 marks)

3.5. Discuss about the importance of the cytoskeleton. (30 marks)

QUESTION 04 **(100 marks)**

4.1. State three pathways of vesicular transport. (15 marks)

4.2. Draw a flow chart to denote the steps of the secretory pathway. (25 marks)

4.3. Relate the structure of the clathrin coat for its function. (30 marks)

4.4. Mention two ways in which the secretory vessels are formed and briefly discuss those methods. (30 marks)

QUESTION 05 **(100 marks)**

5.1. Write short notes on the following.

i. Polysaccharides. (25 marks)
ii. Secondary structure of protein. (25 marks)
iii. Unsaturated fatty acids. (25 marks)
iv. Nucleic acids. (25 marks)

QUESTION 06 **(100 marks)**

6.1. Describe the importance of the interphase stage for the cell cycle. (25 marks)

6.2. Draw a diagram to denote the stages of mitosis and briefly describe those stages. (25 marks)

6.3. Relate the importance of meiosis in producing genetic variation. (25 marks)

6.4. Compare and contrast spermatogenesis and oogenesis processes. (25 marks)

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD 1123 – Introduction to Microbiology

1st Year 1st Semester

Batch 01

End Semester SEQ Examination

INDEX NUMBER: .....

Date : 15th of October 2021
Time : 09.00 am – 12.00 pm (Three Hours) - To answer the questions
12.00 pm – 12.30 pm (30 minutes) - To upload & email the compiled answer script

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INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- The paper will be for three hours (9.00 am – 12.00 pm). You will be given an extra 30 minutes for submission.
- You should write **answers in lined papers** legibly in black or blue ink.
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- Arrange the photographs of your answer script in a word document in an orderly manner, then convert the word document to a **PDF**.
- **Label the PDF: Your Index No – Introduction to Microbiology SEQ**
- **Upload** the labelled **PDF to LMS AND** also **email** the PDF to Fohs.exams@cinec.edu

QUESTION 01 **(100 marks)**

1.1 Differentiate simple and differential staining methods. (15 marks)

1.2 State the methods of smear fixation. (10 marks)

1.3 Describe types of stains based on the nature of chromogen. (30 marks)

1.4 Compare the structures of gram positive and gram negative cell wall. (15 marks)

1.5 State the steps of gram stain technique and effect of each step on bacterial cells. (15 marks)

1.6 Explain the importance of Acid fast staining. (15 marks)

QUESTION 02 **(100 marks)**

2.1 Name the types of asexual reproduction of microbes. (15 marks)

2.2 Classify the types of microbial culture methods. (20 marks)

2.3 Describe the stages of a growth curve. (25 marks)

2.4 State the major factors in the development of a microbial infection. (15 marks)

2.5 Describe different types of culture media depending on consistency and ingredients of medium. (25 marks)

QUESTION 03 **(100 marks)**

3.1 Define the term Minimum Inhibitory Concentration (MIC). (10 marks)

3.2 Describe the principle of Simmon's Citrate and Sugar fermentation biochemical tests. (20 marks)

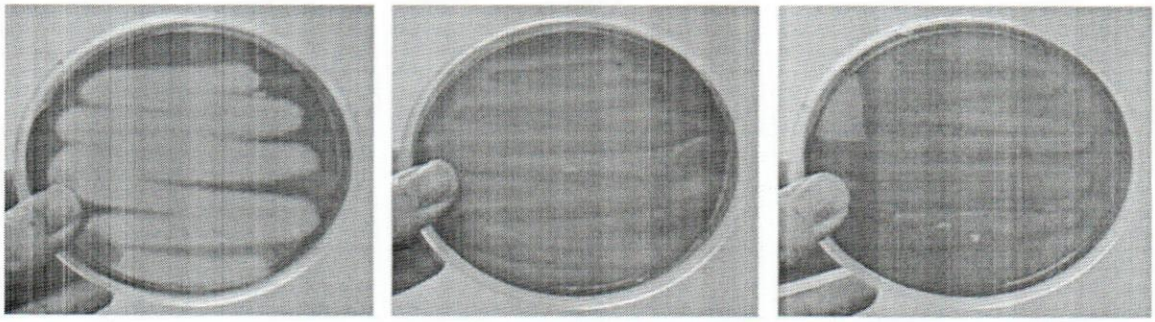
3.3 Decribe steps used in Kirby-Bauer Disk Diffusion Susceptibility Test. (25 marks)

3.4 Compare the E- test and disc diffusion method. (15 marks)

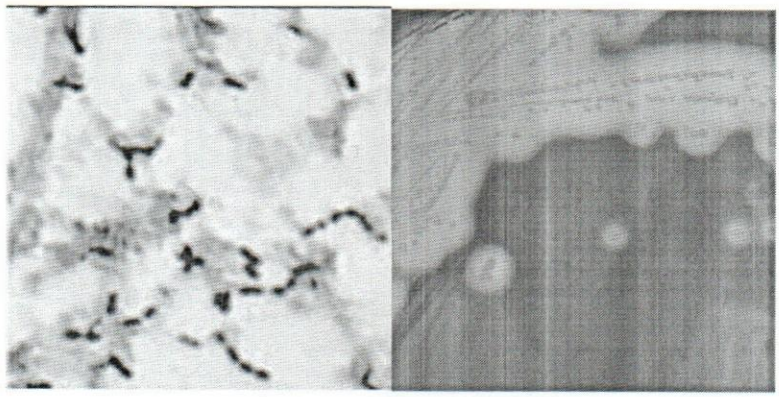
3.5 Describe the 5 different sub types of aerobic and anaerobic microorganisms. (30 marks)

QUESTION 04 **(100 marks)**

4.1 Identify the following types of hemolysis in blood agar and describe their characteristics. (20 marks)



4.2 A throat swab from a patient was cultured on a blood agar media and a gram stain was performed. The results of the gram stain and specimen cultured media are shown below.



4.2.1 Identify the suspected microorganism. (10 marks)

4.2.2 Justify your answer with above microscopic and macroscopic results, along with suitable biochemical identification tests. (25 marks)

4.2.3 State the virulence factors of this organism. (15 marks)

4.3 Name the two types of spore forming *Bacilli*. (15 marks)

4.4 State the diagnosis methods of ***Mycobacterium tuberculosis***. (15 marks)

QUESTION 05 **(100 marks)**

5.1. Describe the bacterial morphology, identification characteristics and the diseases of,

5.1.1. ***Pseudomonas aeruginosa*** (25 marks)
5.1.2. ***Escherichia coli*** (25marks)
5.1.3. ***Salmonella enterica*** (25 marks)
5.1.4. ***Neisseria gonorrheae*** (25 marks)

QUESTION 06 **(100 marks)**

6.1 Differentiate plasmid DNA and Chromosomal DNA. (10 marks)

6.2 Describe the differences between transformation, transduction, and conjugation of bacterial DNA. (30 marks)

6.3 Describe the properties and characteristics of viruses. (20 marks)

6.4 Describe the life cycle of viruses. (20 marks)

6.5 State the methods of transmission of viruses. (20 marks)

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Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD -1133 Chemistry for Biomedicine

1st Year 1st Semester

Batch 01

End Semester SEQ Examination

INDEX NUMBER: .....

Date	**: 13th October 2021**
Time	**: 09.00 a.m. – 12.00 - p.m. (Three hours) - To answer the questions** **12.00 p.m. – 12.30 p.m. (30 minutes) - To upload & email the compiled answer script**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- The paper will be for two hours (9.00 a.m. – 12.00 p.m.). You will be given an extra 30 minutes for submission. Any submission after 12.30 p.m. will not be accepted.
- You should write the answers in **lined sheets** legibly in black or blue ink.
- You MUST write **your index number in the top right corner** of each answer script.
- **Answer script** should be numbered (right bottom) clearly.
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- Arrange the photographs of your answer script in a word document in an orderly manner, then convert the word document to a **PDF**.
- **Label the PDF: Your Index No – Chemistry for Biomedicine SEQ**
- **Upload** the labelled **PDF to LMS AND email** the PDF to **Fohs.exams@cinec.edu**

QUESTION 01. **(100 marks)**

1.1 Write the electronic configuration of Cobalt (Co) element using Aufbau principle. (20 marks)

1.2 Consider the electronic configuration of He, $1s^2$. Write the principal quantum number and the azimuthal quantum number in this given electronic configuration. (10 marks)

1.3 Consider the Bohr's model which successfully explains the spectral emission lines of atomic hydrogen.

1.3.1 Imagine electron in atomic hydrogen was exited into n=5 energy level.

a. Indicate the maximum number of emission lines that can be observed in the hydrogen emission spectrum. (10 marks)

b. Write at least 3 of them. (30 marks)

1.3.2 Briefly describe the reason to obtain spectral of emission lines of atomic Hydrogen (30 marks)

QUESTION 02. **(100 marks)**

2.1 Describe what happens to following properties of any given element across a period from left to right. (30 marks)

a. atomic radii

b. electron affinity

2.2 Indicating all the steps you follow, predict the Lewis structure of PH_3 molecule. (20 marks)

2.3 Indicating all steps you follow, predict the Lewis structure and the name of molecular structure of SO_2. (30 marks)

2.4 Sort **covalent, ionic, and polar covalent** bond types in the increasing order of electronegativity difference between bonding atoms. (20 marks)

QUESTION 03. **(100 marks)**

3.1 Consider the molecule of glucose, $C_6H_{12}O_6$. (M_H=1g/mol, M_C= 12 g/mol, M_O= 16 g/mol)

a. Calculate the molar mass of glucose molecule. (20 marks)

b. Imagine you need to prepare a solution that contains 2.45×10^{23} glucose molecules. Calculate the glucose mass you need to dissolve to achieve this. (30 marks)

3.2 Determine the oxidation states of the manganese (Mn) atom in each of the following species. (20 marks)

a. **Mn**O_3F
b. H_2**Mn**O_4

3.3 Balance the equation: $I^- + Br_2 \rightarrow IO_3^- + Br^-$ in acidic medium. (30 marks)

QUESTION 04. **(100 marks)**

4.1 Indicate four main types of intermolecular forces. (20 marks)

4.2 Formalin (formaldehyde) 40.0% (by mass) solution is used to preserve biological specimens. This solution is prepared by mixing formaldehyde with water. Calculate **how many grams** of water must be added to 425 g of formaldehyde to prepare a 40.0% (by mass) solution of formaldehyde?
HINT: Substitute the known quantities into the definition for mass percent, and then solve for the unknown quantity (mass of solvent). (40 marks)

4.3 Formalin is an aqueous solution of formaldehyde, HCHO, used as a preservative for biologic specimens. How many grams of formaldehyde must be used to prepare 2 L of 2 M formalin? (25 marks)

4.4 What is the volume of 12M HCl, needed to prepare 0.75 L of 0.25 M HCl? (15 marks)

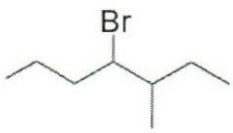
QUESTION 05. **(100 marks)**

5.1 What is a buffered solution? (10 marks)
5.2 Briefly explain the mechanism of buffering action using the buffering system CH_3COOH, CH_3COONa. Use relevant chemical reactions as needed. (30 marks)

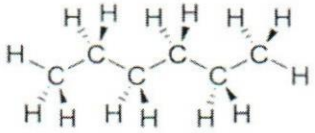
5.3 Identify and name the functional groups of the compounds given below. (20 marks)

a. R-NH_2
b. CH_3OCH_3
c. $CH_3COC_2H_5$
d. CH_3CN

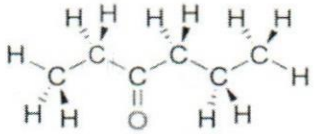
5.4 Write the IUPAC name of the following molecule. (15 marks)



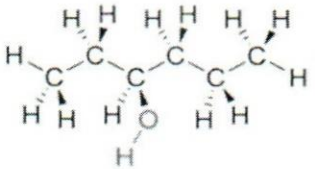
5.5 Briefly describe the boiling point differences in molecules given below. (25 marks)



hexane
bp = 69°C



3-hexanone
bp = 123 °C



3-hexanol
bp =135°C

QUESTION 06. **(100 marks)**

6.1 "Alkali metals are highly reactive with air and reactivity increases down the group". **State 04 chemical reactions** and **the storage conditions** of alkali metals to support this statement. (30 marks)

6.2 "Solubility of hydroxides of alkaline earth metals increases down the group". Briefly describe this trend. (20 marks)

6.3 Use the following information to solve questions a, b & c. (15 marks)
Given the rate law equation:

$$\text{rate} = k[A]^1[B]^2$$

a- Determine the reaction order with respect to A
b- Determine the reaction order with respect to B
c- Determine the total reaction order (n) for the equation.

6.4 The Cell diagram for the Cd/Ag cell is given below.

$$Cd\ (s)\ |\ Cd^{2+}\ (aq,\ 0.15\ M)\ ||\ Ag^{+}\ (aq,\ 0.20\ M)\ |\ Ag\ (s)$$

a. Identify the anode and write the anode reaction. (10 marks)
b. Write the cathode reaction. (05 marks)

6.5 Briefly describe what happens in a galvanic cell. (Hint: Two electrodes are physically separated). (20 marks)

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD 1143 – Laboratory Safety & Ethics

1st Year 1st Semester

Batch 01

End Semester SEQ Examination

INDEX NUMBER: .....

Date : 18th of October 2021
Time : 09.00 am – 12.00 pm (Three Hours) - To answer the questions
12.00 pm – 12.30 pm (30 minutes) - To upload & email the compiled answer script

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INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- The paper will be for three hours (9.00 am – 12.00 pm). You will be given an extra 30 minutes for submission.
- You should write **answers in lined papers** legibly in black or blue ink.
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- **Label the PDF: Your Index No – Laboratory Safety & Ethics SEQ**
- **Upload** the labelled **PDF to LMS AND** also **email** the PDF to Fohs.exams@cinec.edu

QUESTION 01 **(100 marks)**

1.1. Describe safety precautions you would like to take during laboratory work. (20 marks)

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

1.3. Mention the laboratory personal responsible to maintain safety in the laboratory. (10 marks)

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

QUESTION 02 **(100 marks)**

2.1. Define Personal protective equipments. (10 marks)

2.2. Mention five personal protective equipments. (15 marks)

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

i. When drawing blood from a patient
ii. When handling a sputum sample
iii. When handling a combustible chemical
iv. When dealing with a carcinogenic chemical

2.4. Compare and contrast surgical mask and N95 masks. (30 marks)

2.5. Draw a flow chart to denote the proper method of removing gloves after handling a hazardous chemical. (25 marks)

QUESTION 03 **(100 marks)**

3.1. Define Biohazard. (10 marks)

3.2. State the precautions that should be taken when handling a biohazard. (20 marks)

3.3. Discuss the steps that should be taken to prevent fire hazards. (30 marks)

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

Name of the laboratory items	Precautions that should be taken
Flammable chemical	
Carcinogen	
Corrosive chemical	
Oxidizing chemical	

QUESTION 04 **(100 marks)**

4.1. State the main types of radiation. (10 marks)

4.2. Define radioactivity. (15 marks)

4.3. Draw a caution symbol used to represent a radioactive material (15 marks)

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

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

QUESTION 05 **(100 marks)**

5.1. Imagine that you are a conducting a research involving influenza virus. Mention the biosafety level that should be maintained in the laboratory. (10 marks)

5.2. Discuss the standard laboratory practices followed in the biosafety level mentioned in 5.1 above. (35 marks)

5.3. Describe the importance of maintaining biosafety in the laboratory. (25 marks)

5.4. Compare and contrast biosafety cabinet class I, II and III. (30 marks)

QUESTION 06 **(100 marks)**

6.1. Mention 3 safety precautions that should be followed when discarding microbiology laboratory waste. (15 marks)

6.2. State the method of disposal of the following laboratory waste. (40 marks)

Name of the laboratory waste	Method of disposal
Broken glassware	
Contaminated cotton	
Sputum samples	
Urine samples	

6.3. Describe the standard laboratory practice that should be followed when transporting laboratory waste. (20 marks)

6.4. Discuss the importance of waste management for the biomedical science laboratory. (25 marks)

CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD 1153 –English

1st Year 1st Semester

Batch 01

End Semester SEQ Examination

INDEX NUMBER: .....

Date : 06th of October 2021
Time : 09.00 am – 12.00 pm (Three Hours) - To answer the questions
12.00 pm – 12.30 pm (30 minutes) - To upload & email the compiled answer script

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INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- The paper will be for three hours (9.00 am – 12.00 pm). You will be given an extra 30 minutes for submission.
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Question 01 **(100 Marks)**

Read the passage and answer the questions given below.

1. We are living in a world driven by technology. The advancement of technology has played an important role in the development of human civilization. Technology provides innovative ways of doing work through various smart means. The electronic appliances, gadgets, faster modes of transport have added to the comfort factor in our lives. It has helped in improving the productivity of an individual. Technology has brought a revolution in many operational fields. It has undoubtedly made a very important contribution to the progress that mankind has made over the years. Technology has reduced the effort and time and increased the efficiency of the production requirement in every field. It has made our life easy, comfortable, healthy, and enjoyable. It has brought a revolution in transport and communication. The advancement of technology along with science has helped us to become self-reliant in all spheres of life.
2. Technology has changed our day-to-day life. Those days have gone when only the rich could afford the luxuries. Due to the growth of globalization and liberalization, all the luxuries are within the reach of a common man. Today, an average middle-class family can afford a television, washing machine, refrigerator, computer, Internet, etc. At the touch of a switch, a man can witness any event that is happening in far-off places. Technology has not only improved the quality of life but also brought about revolutions in various fields. With the advent of technology in communication which includes telephone, fax machine, cellular phone, Internet, multimedia, email, and communication has become much faster and easier. It has transformed and influenced relationships in many ways. We no longer need to rely on sending physical letters and wait for several days for a response. Technology has made communication so simple that you can connect with anyone from anywhere by calling via mobile phone or messaging them.

1. What has made the luxuries common to all man-kind? (20 marks)

2. How has technology made our life easier? Support your answer referring to the text. (20 marks)

3. Do you agree with the author's statement that, 'technology has transformed and influenced relationships'. Support your answer referring to the text. (20 marks)

4. State the advantages of technology as mentioned in the passage. (20 marks)

5. State the disadvantages of technology. Support your answer with your experience. (20 marks)

Question 02 **(100 marks)**

Fill in the blanks with the words given below in the box. (The first one has been done for you).

Clever	object	along	tripped	picking	released	lemonade	
anything	rubbing	looking	genie	lamp	wishes	thirsty	sand
problem	picked up	young	Magically	exactly	instantly		

Sammy Milton is not very **clever.** He was walking 1..... the beach one day when he 2..... over something and fell on the 3..... . He wasn't 4..... where he was going. "What is this?" he said, 5..... up the 6..... he had tripped over. "I have never seen 7..... like it before." It was, in fact, a very old oil 8..... , and as he 9..... rubbing it, a 10..... suddenly flew out of it. "You 1have just 11..... me from the lamp!", said the genie. "Now you may have 12..... wishes." "Great!", said Sammy who was feeling very 13..... . "I want a bottle of 14..... that never runs out." "No 15..... ," said the genie, and produced one 16..... . Sammy 17..... the bottle.. and drank all the lemonade in one go. 18..... , the bottle filled itself up again. Sammy drank all that, and 19..... the same thing happened again. "That's amazing!" he said. "Thanks very much!" "You still have two more wishes 20..... man." "That's easy, "said Sammy. "I'll have two more of these bottles of lemonade!".

Question 03 **(100 marks)**

Part A **(50 marks)**

Put the verbs in the brackets into the correct tense.

I 1. ..... (be) a fan of soap operas for years. I 2. ..... (always watch) my favourite show three times a week. In fact, until about a week ago, I 3. ..... (never / miss) a single episode. Last Saturday, while I 4. ..... (sit) in front of the TV, the electricity suddenly 5..... (go off). After waiting for about an hour, I finally phoned the telephone company. "What 6. ..... (happen)?" I asked them. "When 7. ..... (we / have) electricity again?" The man I spoke to said it 8. ..... (take) a while to fix the problem. So I 9. ..... (not watch) my favourite soap opera that day. Strangely enough, I 10. ..... (not watch) it since. Suddenly, there are so many other things to do!

Part B **(50 marks)**

When Francis Lee was a boy he 1) ..... (want) to be an astronaut. He 2) .....(watch) TV one day in 1969 when he 3) ..... (see) Neil Armstrong walk on the moon. Since then he 4) ..... (always/dream) of doing the same. Every night when there is a full moon, he 5)..... (stare) up at it for hours and imagines himself walking around on it. At the moment, however, he 6)..... (work) as a night-watchman at a meat factory. He 7) ..... (do) the same job since he left school fifteen years ago, but he still hopes that one day his dream 8) ..... (come) true. He has heard that in the 21st century they 9) ..... (sell) tickets to fly to the moon. For this reason he 10) .....(save) half of his wages every month for the past two years.

Question 04 **(100 marks)**

Re-write the sentences in reported speech.

1. "Don't go!" (10 marks)
   She said .....
2. "Do you work in London?" (10 marks)
   .....
3. "Could you tell me where the post office is?" (10 marks)
   She said .....
4. "Come here!" (10 marks)
   She said .....
5. "I've never been to Wales" (10 marks)
   She said .....
6. "Have you ever seen 'Lord of the Rings'?" (10 marks)
   She said .....
7. "I don't like mushrooms" (10 marks)
   She said .....
8. "Don't be silly!" (10 marks)
   She said .....
9. "Would you mind waiting a moment please?" (10 marks)
   She said .....
10. "How often do you play sport?" (10 marks)
    She said.....

Question 05 **(100 marks)**

Change the following sentences into passive voice.

1. They make these cars in Japan. (10 marks)
   .....
2. You must not drop litter in the street in Singapore or you'll get a fine. (10 marks)
   .....
3. Someone smashed our window last night. (10 marks)
   .....
4. They have already mended the TV set. (10 marks)
   .....
5. People will need more public transport in the near future. (10 marks)
   .....
6. They are decorating the walls. (10 marks)
   .....
7. You should not replace the roof at the beginning of winter. (10 marks)
   .....
8. People are spending less money on cars this year. (10 marks)
   .....
9. They had cooked the meal before 10 o'clock. (10 marks)
   .....
10. Someone was building the wall. (10 marks)
    .....

Question 06 **(100 marks)**

Write an essay on:

Do you think that movies can be considered as a good source of information for students? Why or why not?

Give your reasons and provide examples.

Word limit 175 – 200

Important! – You will be penalized if you exceed the word limit.

CINEC CAMPUS
Beyond A Graduate

PAST PAPERS

Faculty	Department / Section/Division
Not Applicable	Learning Resource Centre

Past Papers

Faculty of Health Sciences

Higher diploma in Biomedical Sciences

(Year 1 – Semester I)

Document Control & Approving Authority	Senior Director – Quality Management & Administration

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Faculty of Health Sciences

Higher Diploma in Biomedical Science
HD 1123 – Introduction to Microbiology
1st year 1st semester – Batch 1 - End Semester Examination – SEQ (Repeat)

Date : **13th January 2023**
Time : **9.00 a.m. to 12.00 p.m.**

INSTRUCTIONS TO CANDIDATES

- This question paper consists of SIX questions.
- Answer ALL questions.
- You should write answers in lined papers legibly in black or blue ink.
- You are not allowed to take out the examination papers.

Question 01 **(100 marks)**

1.1. What are the advantages of dark field microscopy? (20 marks)
1.2.Compare and contrast the optical microscope and electron microscope. (30 marks)
1.3. Briefly describe the method of preparing a bacterial smear for the staining purpose (25 marks)
1.4.Compare and contrast between simple staining and differential staining with examples. (25 marks)

Question 02 **(100 marks)**

2.1. A scientist wanted to check the microorganisms present in a water sample taken from a pond. Therefore he plated the water sample on Nutrient Agar medium. For doing this he used many laboratory instruments.
State whether he had followed "sterilization" or "disinfection" for each of item mentioned below.
And mention the most appropriate method that he can use to achieve sterilization /disinfection of each item accordingly.

2.1.1. Nutrient Agar medium
2.1.2. Petri dishes
2.1.3. Working bench
2.1.4. Inoculation loop (80 marks)

2.2. Mention the stains used for bacterial Endospore staining (20 marks)

Question 03 **(100 marks)**

3.1. Mention the disease caused by each organism
3.1.1. *Corynebacterium diptheriae*
3.1.2. *Vibrio chlolera*
3.1.3. *Bacillus anthracis*

3.1.4. *Mycoplasma pneumoniae*
3.1.5. *Neisseria meningitidis*

(50 marks)

3.2. Describe the bacterial morphology of the *Chlostridium tetani* (20 marks)

3.3. Describe the action of neurotoxin produced by *Chlostridium tetani* and clinical symptoms of a patient which are arising due to that. (30 marks)

Question 04 **(100 marks)**

Describe the bacterial morphology, identification characteristics and the pathogenesis of following microorganisms.

4.1. *Mycobacterium tuberculosis* (25 marks)
4.2. *Vibrio cholera* (25 marks)
4.3. *Streptococcus pneumoniae* (25 marks)
4.4. *Escherichia coli* (25 marks)

Question 05 **(100 marks)**

5.1. Mention 2 key differences between sterilization and disinfection in microbiology.

(30 marks)

5.2. Describe the steps of "Generalized transduction" process in which DNA is transferred from one bacterium to another by a virus. (40 marks)

5.3. Define the following bacteria groups based on their optimum growth temperature.

5.3.1. Thermophiles
5.3.2. Hyperthermophiles

(30 marks)

Question 06 **(100 marks)**

6.1. Classify the culture methods based on ingredients and give example for each type.

(40 marks)

6.2. Describe on the procedure of preparing a Nurtient agar plate for bacteria culturing at the laboratory. (30 marks)

6.3. Describe on different types of hemolysis on blood agar. (30 marks)

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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 01

End Semester Repeat SEQ Examination

Date : 12th of January 2023
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.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 Marks)**

Read the passage and answer the questions given below.

1. Global Warming is a term almost everyone is familiar with. But, its meaning is still not clear to most of us. So, Global warming refers to the gradual rise in the overall temperature of the atmosphere of the Earth. There are various activities taking place which have been increasing the temperature gradually. Global warming is melting our ice glaciers rapidly. This is extremely harmful to the earth as well as humans. It is quite challenging to control global warming; however, it is not unmanageable. The first step in solving any problem is identifying the cause of the problem. Therefore, we need to first understand the causes of global warming that will help us proceed further in solving it. In this essay on Global Warming, we will see the causes and solutions of Global Warming.

2. Global warming has become a grave problem which needs undivided attention. It is not happening because of a single cause but several causes. These causes are both natural as well as manmade. The natural causes include the release of greenhouses gases which are not able to escape from earth, causing the temperature to increase. Further, volcanic eruptions are also responsible for global warming. That is to say, these eruptions release tons of carbon dioxide which contributes to global warming. Similarly, methane is also one big issue responsible for global warming. After that, the excessive use of automobiles and fossil fuels results in increased levels of carbon dioxide. In addition, activities like mining and cattle rearing are very harmful to the environment. One of the most common issues that are taking place rapidly is deforestation. So, when one of the biggest sources of absorption of carbon dioxide will only disappear, there will be nothing left to regulate the gas. Thus, it will result in global warming. Steps must be taken immediately to stop global warming and make the earth better again.

3. As stated earlier, it might be challenging but it is not entirely impossible. Global warming can be stopped when combined efforts are put in. For that, individuals and governments, both have to take steps towards achieving it. We must begin with the reduction of greenhouse gas. Furthermore, they need to monitor the consumption of gasoline. Switch to a hybrid car and reduce the release of carbon dioxide. Moreover, citizens can choose public transport or carpool together. Subsequently, recycling must also be encouraged. For instance, when you go shopping, carry your own cloth bag. Another step you can take is to limit the use of electricity which will prevent the release of carbon dioxide. On the government's part, they must regulate industrial waste and ban them from emitting harmful gases in the air. Deforestation must be stopped immediately and planting of trees must be encouraged.

4. In short, all of us must realize the fact that our earth is not well. It needs to treatment and we can help it heal. The present generation must take up the responsibility of stopping global warming in order to prevent the suffering of future generations. Therefore, every little step, no matter how small carries a lot of weight and is quite significant in stopping global warming.

1. According to the text, what is global warming? (10 marks)
2. As mentioned in the passage, what is the first step of solving a problem? (10 marks)
3. What is the author's main purpose of writing this article? (10 marks)
4. Why has the author mentioned that increasing temperature is harmful to both the earth and the humans? (10 marks)
5. Do you agree with the author's statement, 'Global warming has become a grave problem which needs undivided attention?' If yes, why? (20 marks)
6. Are humans responsible for global warming? Support your answer referring to the text. (20 marks)
7. What is the main idea of the following paragraphs? (20 marks)
   1. Paragraph 1
   2. Paragraph 2
   3. Paragraph 3
   4. Paragraph 4

QUESTION 02 **(100 marks)**

Fill in the blanks with the words given below in the box. (The first one has been done for you).

rule	skin	better	dark-skinned	colours	country
discrimination	transport	smaller	became	services	population
work	facilities	colonialism	according	racial	equal
spend	path	divided			

There was a time when facilities were **divided** among people on the basis of their 1.....colour. From the seat reservations in public 2..... to any other public facilities, everywhere, whites used to get 3..... facilities whereas 4.....people, the blacks, got the worst 5..... White supremacy existed in every 6..... under British 7..... In some countries, racial 8..... was found on a larger scale whereas in others on a 9..... scale. However, in South Africa, it 10..... worse.

Three-fourths of the total 11 ..... were black people there. The country's economy used to run on the strength of their hard 12....., but all the good 13..... were available to the whites. Although racial discrimination was there in South Africa for a long time, the National Party government made a 14 ..... in 1948 that blacks and whites would live in different places and the public facilities were divided 15..... to their skin 16..... Since good always triumphs over evil, the struggles of Nelson Mandela put an end to the rules of 17..... discrimination, after which everyone started getting 18..... facilities. It was not so easy. Nelson Mandela had to 19..... 28 years of his life in prison. Mandela was a man who followed Gandhi's 20..... . He did this without taking up arms, without any bloodshed.

QUESTION 03 **(100 marks)**

Part A **(50 marks)**

Put the verbs in the brackets into the correct tense.

I 1. ..... (be) a fan of soap operas for years. I 2. ..... (always watch) my favourite show three times a week. In fact, until about a week ago, I 3. ..... (never / miss) a single episode. Last Saturday, while I 4. ..... (sit) in front of the TV, the electricity suddenly 5..... (go off). After waiting for about an hour, I finally phoned the telephone company. "What 6. ..... (happen)?" I asked them. "When 7. ..... (we / have) electricity again?" The man I spoke to said it 8. ..... (take) a while to fix the problem. So I 9. ..... (not watch) my favourite soap opera that day. Strangely enough, I 10. ..... (not watch) it since. Suddenly, there are so many other things to do!

Part B **(50 marks)**

When Francis Lee was a boy he 1) ..... (want) to be an astronaut. He 2) .....(watch) TV one day in 1969 when he 3) ..... (see) Neil Armstrong walk on the moon. Since then he 4) ..... (always/dream) of doing the same. Every night when there is a full moon, he 5)..... (stare) up at it for hours and imagines himself walking around on it. At the moment, however, he 6)..... (work) as a night-watchman at a meat factory. He 7) ..... (do) the same job since he left school fifteen years ago, but he still hopes that one day his dream 8) ..... (come) true. He has heard that in the 21st century they 9) ..... (sell) tickets to fly to the moon. For this reason he 10) .....(save) half of his wages every month for the past two years.

QUESTION 04 **(100 marks)**

Re-write the sentences in reported speech.

1. "Don't go!" (10 marks)
   She said .....
2. "Do you work in London?" (10 marks)
3. "Could you tell me where the post office is?" (10 marks)
   She said .....
4. "Come here!" (10 marks)
   She said .....
5. "I've never been to Wales" (10 marks)
   She said .....
6. "Have you ever seen 'Lord of the Rings'?" (10 marks)
   She said .....
7. "I don't like mushrooms" (10 marks)
   She said .....
8. "Don't be silly!" (10 marks)
   She said .....
9. "Would you mind waiting a moment please?" (10 marks)
   She said .....
10. "How often do you play sport?" (10 marks)
    She said.....

QUESTION 05 **(100 marks)**

Part A **(50 marks)**

Change the following sentences into passive voice.

1. They make these cars in Japan. (05 marks)
2. You must not drop litter in the street in Singapore or you'll get a fine. (05 marks)
3. Someone smashed our window last night. (05 marks)
4. They have already mended the TV set. (05 marks)
5. People will need more public transport in the near future. (05 marks)
6. They are decorating the walls. (05 marks)
7. You should not replace the roof at the beginning of winter. (05 marks)
8. People are spending less money on cars this year. (05 marks)
9. They had cooked the meal before 10 o'clock. (05 marks)
10. Someone was building the wall. (05 marks)

Part B **(50 marks)**

Fill the gaps with the correct tenses suitably. (passive voice)

1. In this street letters ..... by the postman at 8 every day. (deliver) (05 marks)
2. This bag .....on the bus yesterday night. (find) (05 marks)
3. I'm afraid the dress .....in hot water. (cannot wash) (05 marks)
4. .....your motorbike ..... yet? I'd like to borrow it. (repair) (05 marks)
5. The message ..... tomorrow, I promise. (send) (05 marks)
6. These offices ..... now. Be careful, the floors are wet. (clean) (05 marks)
7. This report ..... in time if you didn't help me. Thank you very much. (not finish) (05 marks)
8. Why ..... the TV ..... ? Everyone has gone to bed. (turn on) (05 marks)
9. This building needs renovating. It ..... since the 1960's. (not reconstruct) (05 marks)
10. Madam, you cannot take your bag into the gallery. All bags ..... in the cloakroom. (must leave) (05 marks)

QUESTION 06 **(100 marks)**

Write an essay on:

Do you think that movies can be considered as a good source of information for students? Why or why not? Give your reasons and provide examples.

(Word limit 175 – 200. Important! – You will be penalized if you exceed the word limit.)

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CINEC CAMPUS
Beyond A Graduate

Faculty of Health Sciences

Higher Diploma in Biomedical Sciences

HD 1113 – Cell Biology

1st Year 1st Semester

Batch 01

End Semester Repeat SEQ Examination

Date : 11th of January 2023
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.
- You are not allowed to take out the examination papers.

QUESTION 01 **(100 marks)**

1.1. State the components of a typical eukaryotic cell. (30 marks)

1.2. Relate the role of nucleus in controlling the cell. (30 marks)

1.3. Write short notes on the following.

i. Peroxisome (20 marks)
ii. Lysosome (20 marks)

QUESTION 02 **(100 marks)**

2.1. Define fluid mosaic model. (10 marks)

2.2. Relate the structure of phospholipid in relation to its function. (35 marks)

2.3. Discuss the factors which aid to maintain the fluidity of the plasma membrane. (35 marks)

2.4. Differentiate between endocytosis and exocytosis. (20 marks)

QUESTION 03 **(100 marks)**

3.1. Define what is known as cell junctions. (15 marks)

3.2. Compare and contrast between the main types of cell junctions. (30 marks)

3.3. Describe the structure of gap junctions using a diagram. (25 marks)

3.4. Discuss about the importance of tight junctions. (30 marks)

QUESTION 04 **(100 marks)**

4.1. State three pathways of vesicular transport. (15 marks)

4.2. Draw a flow chart to denote the steps of the secretory pathway. (25 marks)

4.3. Relate the structure of the clathrin coat for its function. (30 marks)

4.4. Mention two ways in which the secretory vessels are formed and briefly discuss those methods. (30 marks)

QUESTION 05 **(100 marks)**

5.1. Briefly indicate.

i. Polysaccharides. (15 marks)
ii. Secondary structure of proteins. (15 marks)
iii. Saturated fatty acids. (15 marks)

5.2. Compare and contrast purines and pyrimidines. (30 marks)

5.3. Differentiate the structures of messenger RNA and ribosomal RNA. (25 marks)

QUESTION 06 **(100 marks)**

6.1. Describe the importance of S phase for the interphase process. (25 marks)

6.2. Draw a diagram to denote the stages of mitosis and briefly describe those stages. (25 marks)

6.3. Discuss the importance of independent assortment of chromosomes during meiosis process. (25 marks)

6.4. Compare and contrast spermatogenesis and oogenesis processes. (25 marks)