



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)



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



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. (20 marks)
 (Voice: _____)

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	

- I really like to go the party with you _____ I have to finish my homework first.
- Her mother cooked in the kitchen _____ she was listening to music.
- _____ she did not study well; she could pass the exam.
- Nishani won't be able to attend the meeting _____ she completes his report.
- We shall go to the beach _____ the weather is good.
- He will never do any homework _____ his mother buys him sweets.
- He went to bed earlier yesterday _____ he had to be there at 6 a.m. today.
- I went to the supermarket _____ bought vegetables.
- She went home _____ she finished all her days work.
- 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.



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)**

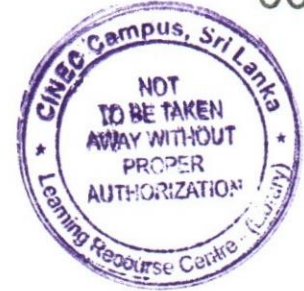
- 5.1. Mention the general contents in a material safety data sheet. (25 marks)
- 5.2. Describe the general precautions you have to follow when using chemicals at the laboratory. (30 marks)
- 5.3. Discuss the precautions that should be taken to prevent fire hazards. (25 marks)
- 5.4. Draw a poster to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



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

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.

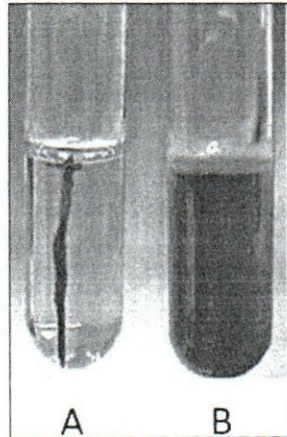
(10 marks)

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 gonorrhoeae*

(25 marks)

6.2 *Pseudomonas aeruginosa*

(25 marks)

6.3 *Salmonella shigella*

(25 marks)

6.4 *Escherichia coli*

(25 marks)



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

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.
- **Answer script should be numbered** (right bottom) clearly.
- 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 help 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 vesicles 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

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.
- **Answer script should be numbered** (right bottom) clearly.
- 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 – 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)

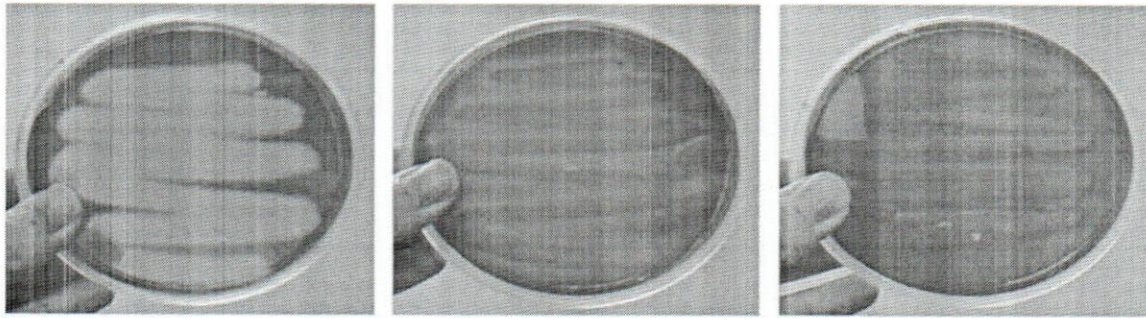
QUESTION 03**(100 marks)**

- 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 Describe 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)

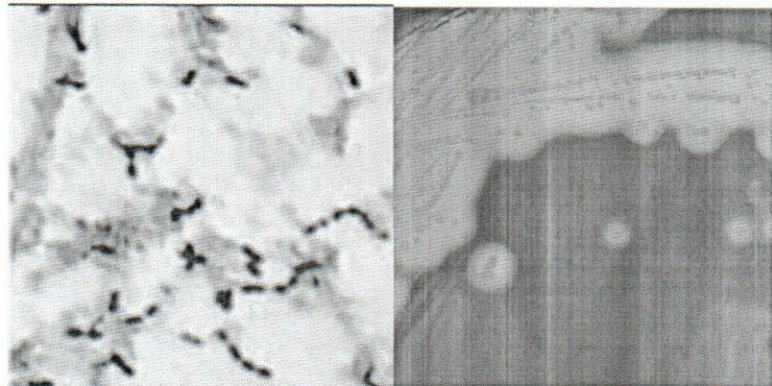
QUESTION 04

(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 gonorrhoeae* (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)



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 excited into $n=5$ energy level.
- Indicate the maximum number of emission lines that can be observed in the hydrogen emission spectrum. (10 marks)
 - 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)
- atomic radii
 - 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, $\text{C}_6\text{H}_{12}\text{O}_6$. ($M_{\text{H}}=1\text{g/mol}$, $M_{\text{C}}= 12\text{ g/mol}$, $M_{\text{O}}= 16\text{ g/mol}$)
- Calculate the molar mass of glucose molecule. (20 marks)
 - 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. MnO_3F
- b. H_2MnO_4

3.3 Balance the equation: $\text{I}^- + \text{Br}_2 \rightarrow \text{IO}_3^- + \text{Br}^-$ 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)

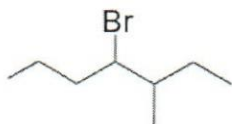
5.1 What is a buffered solution? (10 marks)

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)

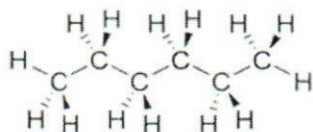
5.3 Identify and name the functional groups of the compounds given below. (20 marks)

- a. R-NH_2
- b. CH_3OCH_3
- c. $\text{CH}_3\text{COC}_2\text{H}_5$
- d. CH_3CN

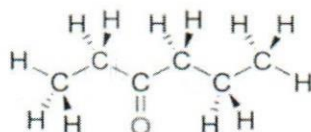
5.4 Write the IUPAC name of the following molecule. (15 marks)



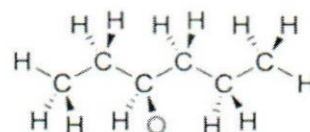
5.5 Briefly describe the boiling point differences in molecules given below. (25 marks)



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.

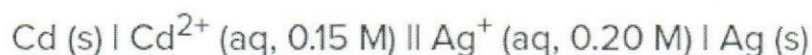
(15 marks)

Given the rate law equation:

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

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

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



- Identify the anode and write the anode reaction. (10 marks)
- 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

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.
- **Answer script should be numbered** (right bottom) clearly.
- 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 – 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 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)



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

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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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 have 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.