



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING

InSTEM

QUALIFICATION: INTRODUCTION TO SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS	
QUALIFICATION CODE: 04STEM	LEVEL: 4
COURSE CODE: IBL402S	COURSE NAME: INTRODUCTION TO BIOLOGY
SESSION: JANUARY 2020	PAPER: N/A
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS	
1.	The number of marks is given in brackets at the end of each questions or part question.
2.	Answer all the questions.
3.	Please write neatly and legibly.
4.	Mark all answer clearly with their respective numbers.

PERMISSIBLE MATERIALS

1. Calculator and stationary

THIS QUESTION PAPER CONSISTS OF 5 PAGES (Excluding this front page)

Section A

Question 1: Multiple choice question. Each question carries one mark.

[16]

Evaluate the statements in each numbered section select the most appropriate answer or phrase from the given possibilities. Fill in the appropriate letter next to the number of the correct statement/phrase in the ANSWER SHEET provided.

1.1 About 25 of the 92 natural elements are known to be essential to life. Meaning none Of these 25 elements should be toxic. Look carefully at the list below, which of these elements are toxic and is not part of the essential elements: (1)

- A Oxygen
- B Manganese
- C Magnesium
- D Molybdenum
- E Arsenic

1.2 Molecular shape is crucial in biology because it determines how biological molecules recognize and respond to one another with specificity. Which of the following reasons is NOT a reason for the success of the bi-polar nature of water? (1)

- A V- Shaped
- B Reversible reactions
- C Irreversible reactions
- D Protons and electrons
- E Isotopes

1.3 The atomic mass of an element can be easily approximated by adding together the number of _____ in an atom of that element. (1)

- A Protons and neutrons
- B Energy levels
- C Protons and electrons
- D Neutrons and electrons
- E Isotopes

- 1.4. Which of the following is NOT a characteristic of prokaryotes? (1)
- A DNA
 - B Cell membrane
 - C Cell wall
 - D Endoplasmic reticulum
 - E Only D and C
- 1.5 Which of the following does NOT occur in Krebs's cycle? (1)
- A Phosphorylation
 - B Glyceration
 - C Hydration
 - D Condensation
- 1.6 Which of the following does NOT have a PH of 8? (1)
- A Soapy water
 - B Baking soda
 - C Seawater
 - D Eggs
- 1.7 Which of these is NOT true about the Carbon Cycle? (1)
- A It is a biogeochemical cycle
 - B The earth's interior releases carbon by volcanoes and geothermal systems
 - C Same as atmospheric acid rain
 - D fossil fuels include carbon interconnected by pathways.
- 1.8 All of these are true about Down's Syndrome except..... (1)
- A Error in cell division called "nondisjunction"
 - B There are three copies of chromosome 21
 - C Mixture of 46, and 47 chromosome
 - D Mild to moderate intellectual disability

- 1.9 Which of the following is NOT a role of the blood in controlling inflammation? (1)
- A Leukocytes destroy invading microbes or cancer cells
 - B Water balance by transferring water to and from tissues.
 - C Antibodies and proteins destroy pathogenic substances.
 - D Platelets factors initiate blood clotting and help minimize blood loss
- 1.10 Reasons why ice floats on water. All are correct except.... (1)
- A Ice is dense than water
 - B Ice has a giant structure with only oxygen at the center of a tetrahedral arrangement oh hydrogen atoms
 - C Covalent bonding and hydrogen bonding present
 - D Ice is less dense than water
- 1.11 The nucleus has all of the following except.... (1)
- A Nucleolus
 - B Pore
 - C Envelope
 - D Perisosome
- 1.12 Which of the following is NOT an amino acid? (1)
- A Valine
 - B Plasmid
 - C Isoleucine
 - D Serine
- 1.13 Which of the following is NOT a proper description of the blood vessel? (1)
- A A tube with a space at the center called the lumen.
 - B A tube which varies in size carries blood to and away from the heart.
 - C A tube with structure of the wall varying in thickness and elasticity.
 - D A tube which does not regulate the pressure or push of blood flow.

- 1.14 Which of the following is NOT true according to the Bohr model (Electron Structure)? (1)
- A Electrons are arranged around the nucleus in shells.
 - B The shell (first shell has less energy than the second level)
 - C The third shell has lesser energy than the first two levels.
 - D Electrons fill the shells from the lowest energy level.
- 1.15 Reproductive cells are each (1)
- A Represented as (2N)
 - B Represented as (N)
 - C Mitotic cells
 - D Represented as N(2N)
- 1.16 Cell walls have all these traits except.... (1)
- A Being a tough layer with amyloplast.
 - B Being a tough layer on plant cells.
 - C Maintains high turgidity.
 - D Contains hemicelluloses, pectin and lignin.

SECTION B - ANSWER ALL QUESTIONS

Question 2 [20]

- 2.1 What is mutation? (2)
- 2.2 Explain nine (9) factors that are responsible for mutations. (18)

Question 3 [20]

Clearly explain the Nitrogen Cycle using diagrams.

Question 4 [20]

- 4.1 List the five (5) function(s) of the liver. (10)
- 4.2 Explain either the deamination or the detoxication process. (10)

Question 5

[10]

Discuss the differences between plastids and plasmids.

Question 6

[12]

Fully explain the term *binomial nomenclature system* using the name African Buffalo (*Syncerus caffer*)

Question 7

[22]

- 7.1 Describe the use of Glucose by green plants as a product of Photosynthesis. (8)
- 7.2 Draw the diagram of the Chloroplast and label it. (8)
- 7.3 Explain the benefits of the Chlorophyll. (6)

END OF EXAM