

Bago University
Department of Chemistry
First Semester Examination, March 2019

Third Year B Sc
(Chemistry Specialization)
Answer (any six) Questions

Chem-3105
Biochemistry
Time allowed (3) hours

1. (a) Fill in the blanks with the correct word(s), unit(s), and etc., as necessary.
 - (i) Carbohydrates serve as ----- stores, fuel and metabolic intermediates.
 - (ii) ----- is the study of the chemistry of life.
 - (iii) Phospholipids are the main constituents of ----- membranes.
 - (iv) The prokaryote is formed as ----- while the eukaryote is formed as multicellular.
 - (v) Anabolic pathways are those involved in the ----- of compound.
 - (vi) Specific activity is a measure of enzyme -----.
- (b) Select the correct statement(s), word(s), unit(s) and etc., given in the followings.
 - (i) (Mitochondria, Chloroplast, Ribosomes) are the power plants of all eukaryotic cells.
 - (ii) (Lipids, Fats, Oils) are naturally occurring organic molecules isolated from cells and tissues.
 - (iii) Non-competitive inhibition depends only on the (inhibitor, complex, enzyme) concentration.
 - (iv) The synthesis of identical copies of (RNA, DNA, mRNA) is called replication.
 - (v) An enzyme is a/an (amino acid, protein, nucleic acid) molecule that is a biological catalyst.
 - (vi) DNA polymerase is a template-directed (protein, enzyme, nucleotide).
2. (a) The neutral molecules that contain several hydroxyl groups are readily soluble in water. Explain with an example.
- (b) (i) What is chitin? Draw the subunit of chitin.
(ii) What is glucuronic acid? Draw its structure. How does it play in biotransformation?
3. (a) What are lipids? Classify lipids into hydrolysable and non-hydrolysable ones.
- (b) Provide the factors that affect the enzyme activity. Explain the effect of temperature with relevant diagram.

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4. (a) Discuss the distinct features of kinetic parameters among the competitive and uncompetitive inhibitions.
(b) Describe the lock and key model of active site using the schematic diagram.

5. (a) How would you convert pyruvate into the compounds given below?
(i) lactate (ii) ethanol (iii) acetaldehyde
(b) Provide the types of reactions involved in the glycolytic pathway.

6. (a) Compare the prokaryotes and eukaryotes according to organisms, organization, DNA and Metabolism.
(b) Briefly describe the three stages of translation: initiation, elongation and termination.

7. (a) How do you understand mutation and mutagenic agents? What is the adverse effect of the physical mutagens?
(b) (i) Tabulate the consumption and generation of ATP in glycolysis.
(ii) What are the requirements of DNA polymerase?
