



MBH-003-10120014 Seat No. _____

Second Year B. Sc. (Sem. II) (W.I.F. 2016)

(CBCS) Examination

March / April - 2018

Biotechnology : BT-201

(Fundamentals of Biomolecules)

(New Course)

Faculty Code : 003

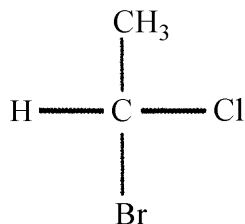
Subject Code : 10120014

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) Draw a diagram wherever necessary.
(3) Figure in the right indicate marks.

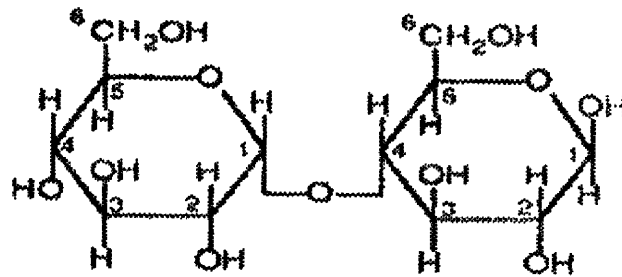
- 1 (A) Answer the following question in brief : **4×1=4**
(1) Define electronegativity.
(2) State whether the following molecule is chiral or achiral.



- (3) What is the pH of coffee if the $[\text{H}_3\text{O}^+]$ is 1×10^{-5} ?
(4) Acidic Buffer is made up of _____ & _____
(B) Answer the following question in brief: (Any One) **1×2=2**
(1) With the help of diagram, comment on "Water is a polar molecule".
(2) Write definitions of acid and base
(C) Answer the following question in detail : **1×3=3**
(Any One)
(1) Explain with the chemical reaction how buffer will maintain pH on addition of HCl and NaOH.
(2) Write three laws of thermodynamics.

- (D) Write a note on following question : (Any One) $1 \times 5 = 5$
- (1) Describe any ten physical properties of water.
 - (2) Differentiate between strong and weak bonds and give a brief account on one bond of each

- 2 (A) Answer the following question in brief : $4 \times 1 = 4$
- (1) Lactose is disaccharide, its monomer units are _____
 - (2) Identify the Molecule and label the linkage

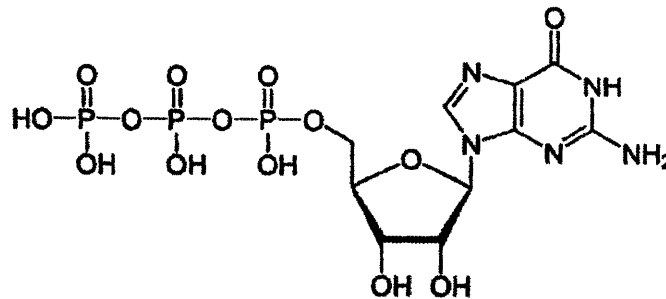


- (3) Write one difference between proteoglycan and glycoprotein.
 - (4) _____ bond is present between two monosaccharide.
- (B) Answer the following question in brief: (Any One) $1 \times 2 = 2$
- (1) Define reducing sugar and write examples of reducing and nonreducing sugars
 - (2) Explain any one disaccharide with structure
- (C) Answer the following question in detail : (Any One) $1 \times 3 = 3$
- (1) Write a brief note on different steps involved in cyclic structure formation of aldose sugar
 - (2) Write difference between homopolysaccharide and heteropolysaccharide and explain any two homopolysaccharide with structure
- (D) Write a note on following question : (Any One) $1 \times 5 = 5$
- (1) Describe aldose sugars with structure in chart form.
 - (2) Reactions of monosaccharide

- 3 (A) Answer the following question in brief : $4 \times 1 = 4$
- (1) Among all amino acids, what is unique about glycine?
 - (2) What are essential amino acids?
 - (3) Which level of protein structure determines the shape and function of a protein?
 - (4) What is Zwitter ion?

- (B) Answer the following question in brief: (Any One) $1 \times 2 = 2$
- (1) Briefly explain types of DNA Protein interaction with example
 - (2) Describe the type of bonds found in protein biomolecules.
- (C) Answer the following question in detail : (Any One) $1 \times 3 = 3$
- (1) Give an account on molecular chaperones
 - (2) Draw, name and state the three-letter code of the structures of aromatic amino acids.
- (D) Write a note on following question : (Any One) $1 \times 5 = 5$
- (1) Explain four structural level of protein
 - (2) Explain Edman and Sanger method of protein sequencing

- 4 (A) Answer the following question in brief : $4 \times 1 = 4$
- (1) Identify and write the full name of the structure.



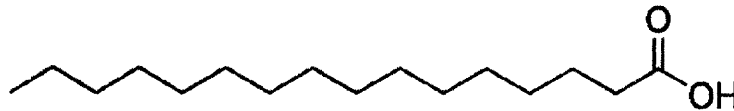
- (2) If double stranded DNA has 12% G (guanine), what percent A (adenine), T (thymine) and C (cytosine) would you expect?
 - (3) Differentiate nucleoside and nucleotide.
 - (4) The distance between two nucleotides in DNA is _____
- (B) Answer the following question in brief: (Any One) $1 \times 2 = 2$
- (1) What is the rule for the pairing of nitrogenous bases within the DNA molecule, explain in brief
 - (2) Write a brief note on Nucleotide
- (C) Answer the following question in detail : (Any One) $1 \times 3 = 3$
- (1) List the differences between DNA and RNA
 - (2) Describe the structure & function of three major types of RNA molecules with diagrams.

(D) Write a note on following question (Any One) 1×5=5

- (1) Describe Watson and crick model of DNA and describe the two types of bonds present in double helical structure.
- (2) Explain Sanger method of nucleic acid sequencing

5 (A) Answer the following question in brief : 4×1=4

- (1) Write the name of major type of lipids found in cell membranes.
- (2) The following is the structure of palmitic acid. Write the correct nomenclature from carboxyl (COOH) end.



- (3) Write difference between fat and oil.
- (4) Vitamin C is also known as _____

(B) Answer the following question in brief: (Any One) 1×2=2

- (1) Define : saturated and unsaturated fatty acid and give one example for each
- (2) Explain structure of Fatty acid with diagram

(C) Answer the following question in detail : (Any One) 1×3=3

- (1) Explain structure and function of Triacylglycerol
- (2) Write a brief note on structure and function of phospholipid

(D) Write a note on following question : (Any One) 1×5=5

- (1) Classify the vitamins and write functions, two sources and deficiency disorder for any three water-soluble vitamins
- (2) Describe classification of lipids with diagrams.
