



# UNIVERSITY OF THE PUNJAB

**B.A. / B.Sc. Part - I**  
**Annual Examination - 2018**

Roll No. ....

**Subject: Biochemistry-I**  
**PAPER: A (Macro Molecules)**

**TIME ALLOWED: 3 hrs.**  
**MAX. MARKS: 40**

**NOTE: Attempt FIVE questions including question # 1 which is compulsory.**  
**All questions carry equal marks.**

Q.1. Select the correct answer.

(8)

i) Which of the following is an example of a storage polysaccharide made by animals?

- a) Cellulose
- b) Glycogen
- c) Amylopectin
- d) Starch

ii) The general formula of polysaccharides is

- a)  $(C_6H_{10}O_5)_n$
- b)  $(C_6H_{12}O_5)_n$
- c)  $(C_6H_{10}O_6)_n$
- d)  $(C_6H_{10}O_6)_n$

iii) The power house of the cell is

- a) Nucleus
- b) Cell membrane
- c) Mitochondria
- d) Lysosomes

iv) A Zwitter ion is one which has in aqueous solution:

- a) One positive charge and one negative charge
- b) Two positive charges and one negative charge
- c) Two negative charges and one positive charge
- d) No electrical charges at all

v) Tertiary structure of a protein describes

- a) The order of amino acids
- b) Location of disulphide bonds
- c) Loop regions of proteins
- d) The ways of protein folding

**P.T.O.**

**vi) In globular proteins, a Leu residue would most likely be found**

- a) participating in H-bonding
- b) on the outside
- c) on the interior
- d) both on the interior and outside surface

**vii) Two sugars which differ from one another only in configuration around a single carbon atom are termed as**

- a) Epimers
- b) Anomers
- c) Optical isomers
- d) Stereoisomers

**viii) Which amino acids are found in large amounts in collagen**

- a) Pro, Phe and Gly
- b) Pro, Gly and OH - Pro
- c) lys, His, and Arg
- d) Tyr, Phe and Trp

Q.2. Write a detailed note on quaternary structure of protein. Explain with example of hemoglobin. (8)

Q.3. How lipids are classified. Give biological significance of Cholesterol and Lipoproteins. (8)

Q.4. Write a note on major helical forms of DNA. (8)

Q. 5 a. What is difference between Gram negative and Gram positive bacteria? (2)  
b. How bacterial cell wall is synthesized (6)

Q.6. Define lipoproteins. Explain briefly properties of lipoproteins. (8)

Q.7. Write notes on (4+4)  
(a) Proteoglycans  
(b) Micelles

Q.8. What are structural differences between glycogen and cellulose and how they effect on their functional differences? (8)



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**Annual Examination - 2018**

Roll No. ....

**Subject: Biochemistry-I**  
**PAPER: B (Enzymology and Signal Transduction)**

**TIME ALLOWED: 3 hrs.**  
**MAX. MARKS: 35**

**NOTE: Attempt any FIVE questions. Question # 1 is compulsory. All questions carry equal marks.**

Q. No.1.

1 x 7 = 7

(A), Select the correct answer.

- i), The vitamin K is very important for health and required for
- a. conversion of prothrombin into thrombin
  - b. biosynthesis of prothrombin
  - c. conversion of fibrinogen to fibrin
  - d. thromboplastin formation
- ii), Which metals is required for protein metabolism?
- a. Molybdenum
  - b. Maganese
  - c. Magnesium
  - d. Calcium
- iii), When the absorption of iodine and growth of thyroid glands increased? It is the function of
- a. Prolactin hormone
  - b. Thyroid stimulating hormones
  - c. Tri-iodothyronine
  - d. Thyroglobulins protein
- iv), The enzyme involved in biochemical reactions leads toward
- a. an increase in energy of activation
  - b. maintain energy of activation
  - c. decrease in energy of activation
  - d. slow down activation of reaction
- v), Enzyme and substrate binding is represented as lock and key model introduced by
- a. koshland (1959)
  - b. wilheim Kuhne (1878)
  - c. fischer (1898)
  - d. smith (1970)
- vi), The red blood cells are removed from the blood by
- a. liver
  - b. spleen
  - c. pancreas
  - d. Neutrophils
- vii), When the blood group is unknown then which blood group can be used in transfusion?
- a. AB +
  - b. AB-
  - c. O +
  - d. O -

- Q. No.2. (a), Define vitamins. Give examples. 2  
(b), Explain the structure and functions of vitamin E. 5
- Q. No.3. (a), Define humoral and cell mediated immunity. Give names of lymphocytes. 2  
(b), Explain the structure of IgG molecule. 5
- Q. No.4 (a), Define enzymes and give names of major classes of enzyme. 2  
(b), Derive  $K_m$  value of enzyme reaction by Michaelis Menton equation. 5
- Q. No.5. (a), Give names of peptide hormones involved in glucose metabolism. 2  
(b), Describe structure and functions of insulin. 5
- Q. No.6. (a), What is the composition of blood? 2  
(b), Discuss intrinsic pathway of blood coagulation process. 5
- Q. No.7. (a), Write down the requirements of iron in male and female humans. 2  
(b), Discuss the function and absorption of iron in human beings. 5