

**2021**

**CHEMISTRY — HONOURS**

**Paper : SEC-A-2**

**(Analytical Clinical Biochemistry)**

**Full Marks : 80**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer **question no. 1** (compulsory) and **any twelve (12)** questions from the rest (**question no. 2 to 14**).

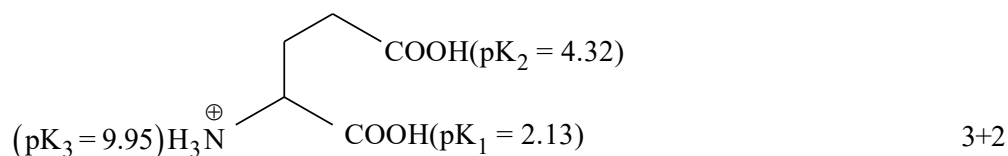
**1.** Answer the following questions :

1×20

- (a) Name a sugar that does not reduce Tollens' reagent.
- (b) Name the coenzyme which acts as an oxidising agent in glycolysis.
- (c) Name the amino acid that can form disulphide bond among themselves.
- (d) Give the name of a stereospecific enzyme.
- (e) Cite one important function of cholesterol.
- (f) An enzyme has EC number 3.4.17.1. What does this signify?
- (g) Give one example of oxidoreductase.
- (h) Give an example of chromoprotein.
- (i) Name the process for conversion of *m*RNA to protein.
- (j) Name the protein present in wool fibres.
- (k) What are the two fundamental 'building block' of lipids?
- (l) Name the imino acid known as  $\alpha$ -helix breaker.
- (m) What is meant by turnover number?
- (n) How many hydrogen bonds are present in G-C base pairs in DNA?
- (o) Mention one anticoagulant for collection of human blood.
- (p) Name two abnormal constituents of urine.
- (q) Which is the rarest blood group?
- (r) Write down the structure of adenosine.
- (s) Give an example of ligase enzyme.
- (t) Define 'OKAZAKI' fragment.

**Please Turn Over**

2. (a) Write down the reactions of irreversible steps of glycolysis.  
 (b) What is the difference in the action of hexokinase and glucokinase? 3+2
3. (a) Define primary, secondary and tertiary structure of a protein.  
 (b) From the following given data, calculate the isoelectric point of glutamic acid.



4. (a) What are fats and oils?  
 (b) What is a liposome? 3+2
5. (a) Name two steroid and one peptide hormones.  
 (b) How is an  $\alpha$ -helix stabilised? 3+2
6. Discuss the salient features of Watson and Crick model of DNA. 5
7. (a) What are non-competitive and uncompetitive inhibitors of enzyme? How do they differ from competitive inhibition?  
 (b) What is ribozyme? How does it differ from an enzyme? 3+2
8. Define lipoproteins and apolipoproteins along with the biological role of both. 5
9. (a) Name and write the structure of a typical triacylglycerol. Also mention two major functions of triacylglycerol.  
 (b) Write down the significance of cholesterol in our body. 3+2
10. (a) What are nonsense codons? Why are they called so?  
 (b) Describe replication fork. 3+2
11. (a) What is protein urea? Mention underlying causes behind it.  
 (b) What are ketone bodies? Why are ketones found in urine? 3+2
12. (a) Name the conditions where blood creatinine is elevated.  
 (b) Mention the lifespan of RBC. 3+2
13. (a) What is a coenzyme? Provide the names and structures of two of the common coenzymes.  
 (b) Name the inhibitor of enolase enzyme. 3+2
14. (a) Polyurea is seen under which clinical conditions?  
 (b) State the differences between serum and plasma. 3+2
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