

August 2025

Biochemistry and Clinical Pathology

Time Allowed: 3 Hours

Full Marks: 80

Answer all Questions as directed

1×10

1. A. Choose the correct alternative.

- 'Body building food' mainly contains – (i) Carbohydrate (ii) Protein (iii) Lipid (iv) Vitamins.
- Increasing blood clotting time is due to the deficiency of Vitamin – (i) A (ii) C (iii) K (iv) B₂.
- Vitamin essential for transamination is – (i) B₁ (ii) B₂ (iii) B₆ (iv) B₁₂.
- In a DNA strand, the nucleotides are linked together by – (i) Glycosidic bond (ii) Phosphodiester bond (iii) Peptide bond (iv) Hydrogen bond.
- Presence of glucose in urine known as – (i) Pyuria (ii) Haematuria (iii) Proteinuria (iv) Glycosuria
- Which of the following produces pyruvate? – (i) Alanine (ii) Leucine (iii) Cystine (iv) Lysine
- Example of a non-essential amino acid is – (i) Leucine (ii) Methionine (iii) Tryptophan (iv) Alanine.
- Glucose residues are linked by β -1,4 glycosidic bonds in – (i) Starch (ii) Cellulose (iii) Amylose (iv) Glycogen.
- The number of mg of KOH required to neutralize the free and combined fatty acid in one gram of a given fat is called – (i) Polenske number (ii) Acid number (iii) Saponification number (iv) Iodine number.
- Number of unsaturation present in Arachidic Acid is – (i) 0 (ii) 1 (iii) 2 (iv) 3.
- Highest elevation with AST is seen in viral – (i) Influenza (ii) Hepatitis (iii) Meningitis (iv) Pneumonia.

1×10

B. Fill in the blanks

- Enzymes concerned with TCA cycle are found in _____.
- Glucose when treated with strong mineral acid produces _____.
- An extracellular enzyme which is secreted ready for action is called _____ secretion.
- Most frequently found amino acid in the active site of an enzyme is _____.
- A charged amino acid which is electrically neutral is known as _____.
- A condition in which the serum sodium level falls below the normal is known as _____.
- A dipeptide contains _____ numbers of amino acids.
- Sugars forming five membered rings are called _____.
- The full name of SGOT is _____.
- The central structure of vitamin B₁₂ is known as _____ ring system.
- Excretion of _____ hormone is increased in certain stages of pregnancy.

3×10

2. Answer any 10 (Ten) questions from the following:

- What do you mean by mutarotation?
- Calculate ATP generation per molecule of glucose in glycolysis.
- Write a brief note on essential fatty acids.
- Give a brief note on Cori cycle.
- Explain briefly primary structure of proteins.
- What do you mean by marker enzyme?
- Write down the chemical structure of Sucrose and Maltose.
- Give chemical constituents and significance of Barfoed's reagent.
- Differentiate between glycogenesis and glycolysis.
- State the clinical significance of platelets.
- Describe two Qualitative tests for protein.
- What is the impact of biotechnology for human development?

3. Answer any 6 (Six) questions from the following:

- a) Classify amino acids based on chemical nature.
 - b) Briefly describe (with reaction) the four oxidative steps of the Krebs's cycle
 - c) Write a note on various reactions involved in protein metabolism.
 - d) Classify carbohydrate with example. Write down chemical structure of a reducing sugar. 4+1
 - e) What do you mean by the abnormal constituents of urine? Write down the significance of abnormal constituents of urine in health and disease.
 - f) Write a short note on structure and functions of cholesterol in the body.
 - g) Write down the functions and deficiency condition of fat-soluble vitamins in human body.
 - h) Write short notes on liver function tests.
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