

2024

Biochemistry and Clinical Pathology

Full Marks: 80

Time Allowed: 3 Hours

Answer all Questions

1×10

1. A. Choose the correct alternative (any ten).

- a) An example of regulatory protein – (i) Insulin (ii) Papain (iii) Collagen (iv) Haemoglobin.
- b) Abnormal constituents of urine – (i) Albumin (ii) Ketone bodies (iii) Sugar (iv) All of the above.
- c) Copper sulphate solution is called – (i) Fehling A (ii) Fehling B (iii) Barfoed's reagent (iv) Seliwanoff's reagent.
- d) The structure of Keratin, a hair protein, is made up of – (i) α -helix (ii) β -pleated (iii) Both α -helix and β -pleated (iv) None of the above.
- e) Presence of pus in urine is known as – (i) Pyuria (ii) Haematuria (iii) Proteinuria (iv) Glycosuria.
- f) The following coenzyme is a nucleotide – (i) NAD^+ (ii) FAD (iii) CoASH (iv) All of the above.
- g) DNA is a polymer of – (i) Ribonucleotides (ii) Deoxyribonucleotides (iii) Deoxyribose (iv) Ribose.
- h) Carbohydrates are present in muscle in the form of (i) Amylopectin (ii) amylase (iii) Collagen (iv) glycogen.
- i) All of the following are basic amino acids except – (i) Lysine (ii) Arginine (iii) Glutamate (iv) Histidine.
- j) Number of unsaturation present in Arachidonic acid is – (i) 2 (ii) 3 (iii) 4 (iv) 5.
- k) Synthesis of cholesterol and steroid is the function of – (i) Nucleus (ii) Endoplasmic reticulum (iii) Golgi apparatus (iv) Ribosomes.

B. Fill in the blanks (any ten)

1×10

- a) Full form of ECF is Extra Cellular Fluid
- b) Hypermnatremia caused due to the absence of sodium
- c) Increase in leucocyte count in body is known as Leukocytosis
- d) IUB stands for International Union of Biochemistry
- e) The process of breakdown of glucose into pyruvic acid is known as Glycolysis
- f) Sodium taurocholate is an example of bile salt
- g) Deficiency of Niacin causes Pernicious anemia
- h) FAD and FMN are the coenzymes of Riboflavin.
- i) CPK means Creatine Phosphate Kinase
- j) Lock and Key model of enzyme activity was first proposed by Emil Fischer
- k) Nucleotides are phosphate esters of nucleosides.

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

3×10

- a) Briefly enumerate the difference between oils and fats.
- b) Discuss the role of neutrophil, eosinophil and basophil in the human body.
- c) Describe the 'Carnitine shuttle' process that occurs during β -oxidation of fatty acid.
- d) Classify Straight Chain fatty acid.
- e) Define – reducing sugar with examples.

- f) Write short notes on Chargaff's rule.
- g) Write short notes on Xanthoprotein test.
- h) Describe various tests to assess Kidney function.
- i) Write in brief about the applications of Biotechnology in human welfare.
- j) Discuss briefly about the therapeutic importance of enzymes.
- k) What are nucleosides? Briefly explain the components and structures of nucleosides.
- l) Write down the chemical composition of Seliwanoff's reagent and state its significance in the qualitative test of carbohydrates.

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

5×6

- a) Briefly describe (with flow diagram) the steps of the urea cycle.
- b) Analyse and elaborate different factors that affect enzyme activity
- c) What is ORT? Write a short note on ORT/ORS.
- d) What is DNA? Describe DNA structure based on Watson & Crick hypothesis.
- e) Describe the importance of minerals in the human body.
- f) Write a short note on 'competitive inhibition of enzyme'.
- g) Write a short note on diseases related to malnutrition of proteins.
- h) Explain different chemical reactions and energetics of glycolysis.