(5 pages) Reg. No. : .....

Code No. : 10887 E **Sub. Code : EEMI 11/ FEMI 11**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

First Semester

Microbiology

Elective I — BASIC AND CLINICAL BIOCHEMISTRY

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is primary function of carbohydrates in human body?
   (a) Insulation
   (b) Energy storage
   (c) Hormone production
   (d) Genetic coding

2. What characteristic do all lipids share?
   (a) They are all water-soluble
   (b) They are all polymers
   (c) They are hydrophobic or amphipathic
   (d) They are all made from amino acids

3. What type of bonds link amino acids together in proteins?
   (a) Hydrogen bond (b) Ionic bond
   (c) Peptide bond (d) Disulfide bond

4. Which of the following proteins plays a crucial role in muscle contraction?
   (a) Myosin (b) Hemoglobin
   (c) Albumin (d) Collagen

5. Which of the following is a hallmark sign of diabetes Ketoacidosis?
   (a) Hypoglycemia (b) Hypertension
   (c) Hyperkalemia (d) Hyperglycemia

6. Which lipoprotein is often referred to as 'bad cholesterol'?
   (a) HDL (b) LDL
   (c) VLDL (d) Chylomicrons

7. Which of the following symptoms is most commonly associated with Phenylketonuria (PKU)?

(a) Darkening of the urine

(b) Mental retardation

(c) Hypertension

(d) Liver failure

8. _____ condition is an example of aminoaciduria?

(a) Alkaptonuria (b) Cystinuria

(c) Phenylketonuria (d) Homocystineuria

9. Which of the following is a characteristic symptom of chronic pancreatitis?

(a) Severe hypoglycemia

(b) Epigastric pain radiating to the back

(c) Dark coloured urine

(d) Abdominal distension

10. Which of the following conditions can cause an elevated ALT level?

(a) Myocardial infraction

(b) Liver cirrhosis

(c) Pancreatitis

(d) Renal failure

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) What are the structural features of oligosaccharides?

Or

(b) Write the biological significance of cholesterol and its impact on health.

12. (a) Explain the general structure of amino acids.

Or

(b) Classify proteins based on their shape and solubility.

13. (a) Define glycogen storage diseases and list three common types.

Or

(b) Describe the pathophysiology of sphingolipidoses.

14. (a) Explain the pathophysiology of Alkaptonuria and explain the clinical manifestations of this disorder.

Or

(b) Write about the biochemical defect and clinical features of Homocystineuria.

15. (a) List out the tests used to diagnose intestinal function disorders.

Or

(b) Explain the clinical significance of measuring AST and serum levels of ALT.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Discuss the structure and biological significance of polysaccharides.

Or

(b) Write the classification of lipids and provide detailed example of each type.

17. (a) Explain various functions of amino acids in the human body beyond protein synthesis.

Or

(b) Write about the structural classification of proteins with examples.

18. (a) Discuss the pathophysiology of hypoglycaemia in diabetic patients and the measure to prevent it.

Or

(b) Describe the metabolic pathway of triglycerides and its relevance in hypertriglyceridemia.

19. (a) Explain the role of phenylalanine hydroxylase in the metabolism of phenylalanine and how its deficiency leads to Phenylketonuria (PKU).

Or

(b) Outline the metabolic disruption and clinical symptoms associated with tyrosinemia.

20. (a) Discuss the clinical manifestations of acute and chronic pancreatitis. How these conditions are typically diagnosed?

Or

(b) Explain the clinical significance of (i) Aldolase (ii) Lactate dehydrogenase (LDH) and (iii) Creatine Kinase.

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