14-08-2024

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I-MBBS

(This paper consists of 2 pages)

First M.B.B.S. (New Scheme) (Main) Examination

August - 2024

Biochemistry

Paper- I

Time: Three Hours

Maximum Marks: 100

Attempt all questions in both sections

(Use separate answer book for each section)

Section-A

1. Fill in the blanks: 4 x 1 = 04

   a) Wernicke- Korsakoff syndrome may occur due to _____ deficiency.

   b) Antidote for methanol poisoning _____.

   c) Glucose is the only source of energy for _____ organisms.

   d) Enzyme pyruvate carboxylase converts pyruvate to _____.

2. Choose the correct option in the following multiple choice questions: 6 x 1 = 06

   i) In contracting skeletal muscle, a sudden elevation of the sarcoplasmic calcium concentration will result in:

   a) Activation of cAMP dependent protein kinase

   b) Conversion of cAMP to AMP by phosphodiesterase

   c) Direct activation of phosphorylase kinase b

   d) Inactivation of phosphorylase kinase a by the action of protein phosphatase- I

   ii) A teenager concerned about his weight, attempts to maintain a fat free diet for a period of several weeks. If his ability to synthesize various lipids were examined. He was found to be most deficient in his ability to synthesize:

   a) Cholesterol b) Prostaglandins

   c) Glycolipids d) Triacylglycerols

   iii) Calculate the amount of cholesterol in the low density lipoproteins in an individual whose lipid panel test results. Total cholesterol = 300 mg/dl, high density lipoprotein cholesterol = 25 mg/dl, Triglycerides = 150 mg/dl:

   a) 55 mg/dl b) 125 mg/dl

   c) 95 mg/dl d) 245 mg/dl

   iv) Which one of statements concerning amino acid is correct?

   a) Alanine is ketogenic

   b) Amino acids that are catabolized to acetyl COA are glucogenic

   c) Branched chain AA are catabolized primarily in liver

   d) Cysteine is essential for individuals consuming diet severely limited in methionine

a) Arylsulfatase A
b) Hexosaminidase A
c) Sphingomyelinase
d) Ceramidase

vi) Deficiency of Vit B_{12} can cause:

a) Microcytic anaemia
b) Normocytic anaemia
c) Megaloblastic anaemia
d) None of the above

3. A 20 year old male suffering from malaria was treated with chloroquine. He reported to the emergency with Jaundice & haemolytic anaemia.

a) State the type of Jaundice. 02
b) What is the cause of haemolysis? 02
c) What is the reaction catalysed by the enzyme? 02
d) How does the deficiency of enzyme lead to haemolysis? 03
e) What is the role of this pathway in various cells in the body? 06

4. Differentiate between (Any five): 5 x 2 = 10

a) Metabolic acidosis and respiratory acidosis.
b) NADH and NADPH roles.
c) Thiamine & Thymine.
d) Hypokalemia and Hyperkalemia.
e) Carnitine & Carotene.
f) Diffusion and osmosis.

5. Short notes on (Any three): 3 x 5 = 15

a) Principles of communication in diabetic patient about diet and exercise.
b) Severe combined immunodeficiency disorder (SCID).
c) Wald's visual cycle.
d) Biochemical basis of diabetic cataract.

Section-B

6. Describe the fate of amino acid Nitrogen in body. Give an account of acquired hyperammonimias and biochemical basis of coma in such patients. 20

7. Explain Why (Any five): 5 x 2 = 10

a) Lipoprotein A is known as little rascal.
b) Tryptophan deficiency can cause Pellagra.
c) Rappaport Leubring cycle is very important to deliver oxygen at tissue level.
d) TCA cycle is anabolic.
e) Dipalmitayl lecithin structure is different from other phospholipids.
f) Prostaglandins are used as therapeutic agents.

8. Explain briefly (Any four): 4 x 5 = 20

a) Uncouplers and inhibitors of electron transport chain.
b) Endogenous antioxidants.
c) Therapeutic uses of enzymes.
d) Lipotropic factors.
e) Hormonal control of glycogen diagrammatically.