RUHS

First Year MBBS Examination

I MBBS BIOCHEMISTRY PAPERI

Date: 14-03-2022

Time:

3 hours Max Marks: 100

Instructions: INSTRUCTIONS: Attempt all questions in both sections: (Use separate answer book for each section)

Section 1

1. Fill in the blanks: (6)
   a. The ammonium ions excreted into urine are derived from _____
   b. Accumulation_____in the lens of the eye causes cataracts in type 2 diabetes mellitus.
   c. In the biosynthesis of cholesterol, the rate-limiting enzyme is _____
   d. The first pentose formed in HMP shunt is _____
   e. _____ enzyme typically elevated in alcoholism.
2. Choose the correct option in the following multiple choice questions: (4)
   a. All of the following amino acids contribute to purine synthesis EXCEPT;
      a) Glutamine
      b) Glycine
      c) Aspartate
      d) Cysteine
   b. Gamma-Glutamyl cysteinyl glycine is otherwise known as;
      a) Oxytocin
      b) Bradykinin
      c) Glutathione
      d) Angiotensin

c. Which of the following is the key regulator enzyme of heme synthesis?
   a) Porphobilinogen deaminase
   b) PBG Synthase
   c) Uroporphyrinogen III Synthase
   d) ALA Synthase

d. The amino acid which is associated with atherosclerosis is,
   a) Lysine
   b) Alanine
   c) Cysteine
   d) Homocysteine

3. A 35-year-old woman visited OPD with complaints of excessive menstrual bleeding. She also complained of lethargy, giddiness, excessive tiredness, and (15) breathlessness on walking. Since the past few months, her physical performance had significantly decreased. She was a pure diagnosis of iron deficiency vegetarian. Based on the clinical history and blood reports, anaemia was made and treatment started with ferrous sulphate and vitamin C.
   a. What are the dietary sources of iron? Give daily requirements of iron (RDA) for adults?
   b. What are the causes of iron deficiency anaemia?
   c. Why vitamin C is given to this patient? Explain the role of Vitamin C in iron metabolism.
   d. Why iron metabolism is called as one-way metabolism?
   e. What is the biochemical role (functions) of Iron. Give two examples of iron-containing enzymes?

4. Write short notes on: (10)
   a. Significance of NADPH.
   b. Renal mechanism for acid base regulation.
   c. Regulation of Blood calcium level.
   d. Complications of diabetes mellitus (A.654)
   e. Ketogenesis and ketolysis. (A.295)

5. Explain briefly (Any three): (15)
   a. Alcohol Metabolism.

b. Difference between hemoglobin and Myoglobin.
c. Phenylketonuria (A.352)
d. Clinical importance of competitive enzyme inhibition.

Section 2

1. Beta oxidation of Long-Chain Saturated fatty acid (Palmitic acid - 16c) and explain energy production from it. (20)
2. Explain Why (Any fivc): (10)
   a. Blood buffers act quickly but not permanently. (A.476)
   b. Primaquine administration in G6PD deficient patients can precipitate Hemolytic anaemia.
   c. For estimation of blood sugar, blood is collected in a fluoride bulb/vial.
   d. Hyaluronidase is called as spreading factor.
   e. A single intramuscular dose of Vitamin K is given to all newborns.
   f. Deficiency of Lipoprotein lipase results in Hypertriglyceridemia.
3. Explain briefly (Any four): (20)
   a. Cori's cycle.
   b. Lung surfactant and respiratory distress syndrome.
   c. Fatty liver - definition and causes.
   d. Pellagra.
   e. Wilson's disease.

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