Exam Date & Time: 06-Sep-2018 (02:00 PM - 04:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)
MBBS PHASE - I STAGE - I DEGREE EXAMINATION - SEPTEMBER 2018
Thursday, September 06, 2018
Biochemistry [M1BIO]

BIOCHEMISTRY - PAPER - II (ESSAY)

Max. marks : 60
Answer all the questions
Draw diagrams wherever appropriate

1) Define gluconeogenesis. Write in detail the steps involved in gluconeogenesis from glycerol (5)

2) Illustrate the mechanism of action of a hormone which uses calcium-phosphatidylinositol second messenger system (5)

3) Explain the reclamation of bicarbonate by the proximal tubular cells with a diagram. (4)

4) What are dietary fibres? Explain its FOUR beneficial effects on health (5)

5) Rita, a forty-two-year-old lady visited her physician with complaints of polyphagia, polydipsia and polyuria since a couple of months. On investigations, her fasting plasma glucose was found to be 183 mg/dL & HbA_{1C} was 7.3%. Describe the biochemical basis for the altered blood findings observed in Rita. (4)

6) Describe in detail the hormonal regulation of glycogenolysis (4)

7) Name the coenzyme forms of riboflavin and mention its deficiency manifestations. (3)

8) Describe the features of competitive enzyme inhibition with the help of a Lineweaver Burk plot. (4)

9) A 20-year-old male presented with fatigue, shortness of breath and yellowish sclera. Laboratory tests showed a low hemoglobin level, high reticulocyte count and increased bilirubin in blood. A peripheral smear showed presence of Heinz bodies in erythrocytes. The patient had been quite healthy during a previous visit to the doctor two weeks earlier, when he was started on antimalarial drugs in preparation for his tour to the tropics.

9A. Which enzyme is deficient in the erythrocytes of this patient?
9B. Describe the biochemical basis of the clinical and laboratory findings mentioned in the case.

(0.5+4.5 = 5 marks)

10) Calculate the number of ATPs formed from the complete oxidation of one molecule of acetyl CoA through TCA cycle. (2)

11) Describe the steps of detoxification of ammonia in the liver. How is it regulated? (6)

12) Draw the structure of tRNA and mention how its structure relates to its function. (3)

13) Describe three features of the genetic code (3)

14) Carnitine deficiency leads to muscle weakness following a prolonged exercise. Justify with biochemical reasons. (2)

15) High circulating level of LDL is a strong predisposing factor for atherosclerosis. Justify your answer with suitable illustration. (5)