Batch 44, March 2020

Question Paper

Exam Date & Time: 27-Feb-2020 (02:00 PM - 04:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MELAKA MANIPAL MEDICAL COLLEGE (MANIPAL CAMPUS)
MBBS PHASE - I STAGE - I DEGREE EXAMINATION - FEBRUARY/MARCH 2020
Thursday, February 27, 2020

Biochemistry [M1BIO]

BIOCHEMISTRY - PART - II (ESSAY)

Section Duration: 120 mins

Max. marks : 60

Answer all the questions

Draw diagrams wherever appropriate

1. A two-year-old girl presented with puffiness below the eyes and edema in the feet. Investigations showed her serum albumin to be 2 g/dL and 24 hour urinary albumin excretion to be 6 g.

   1A. Identify the condition in this child.

   1B. Draw a labeled serum protein electrophoretic pattern of this child in comparison with normal.

   1C. Give the biochemical basis for the clinical and laboratory findings mentioned.

   (0.5+1+2.5 = 4 marks)

2. Write the detailed reactions of the energy-yielding pathway in mature RBCs.

   (8 marks)

3. Illustrate the steps of metabolism of the lipoprotein that transports dietary lipids. Name the dyslipoproteinemia with its enzyme defect where the level of this lipoprotein in serum is extremely high.

   (6 marks)

4. Explain THREE beneficial effects of dietary fibers.

   (3 marks)

5. Write in detail the catalytic actions of the disaccharidases.

   (4 marks)

6. Supplementation with pyridoxine reduces risk for cardiovascular disease in people with high serum homocysteine levels. Justify.

(2 marks)

7. Justify how increased blood glucose level over a long period of time increases susceptibility to cataracts.

(3 marks)

8. Amit, a 10 year old boy complained of pain in the joints and had a history of neurological symptoms. He displayed a compulsive urge to bite his fingers and lips. On investigation, he was found to have hyperuricemia.

   8A. Name the disorder and the deficient enzyme in this case.

   8B. Describe in detail the reactions affected.

   8C. Explain the cause for pain in the joints and hyperuricemia.

(1+2+2 = 5 marks)

9. A six year old boy had bone deformities such as bow legs and pigeon chest. He had a history of delayed eruption of teeth. On enquiring, the mother informed the physician that the boy had a low intake of milk. The following were the biochemical findings in blood.

   Calcium: 8.0 mg/dL

   Phosphate: 1.5 mg/Dl

   9A. What is your diagnosis? Name the nutrient deficient and mention its active form.

   9B. Describe the formation of active form of the above nutrient

(2+3 = 5 marks)

10. Describe the synthesis of glycogen

(3 marks)

11. Illustrate the process of bicarbonate reclamation in the kidney

(3 marks)

12. Write the steps of bilirubin formation mentioning its site and subcellular site

(3 marks)

13. Illustrate Cori's cycle and give its significance

(3 marks)

14. Describe the insulin mediated glucose uptake with the help of a diagram.

(3 marks)

15. Illustrate the mechanism of adenylate cyclase second messenger system.

(5 marks)