



All India Institute of Medical Sciences, Kalyani
First Professional MBBS Examination 2022 (Batch-2021-22)

Time: 3 Hrs.

Biochemistry (Paper-I)

Marks: 100

INSTRUCTIONS:

- Answer all questions.
- Illustrate your answers with well labelled diagram wherever necessary.
- Answer each section in a separate answer book.

SECTION – A (50 MARKS)

1. A 5-year-old child was brought to OPD with complaints of mental retardation, delayed developmental milestones, hyperactivity and seizures. Child had light coloured hair, skin and unpleasant mousy body odour. Serum Phenylalanine was 30mg/dl (normal- 1-2mg/dl). Ferric chloride test showed transient blue green coloured urine. (1+2+3+4)
- i. What is your probable diagnosis?
 - ii. Mention the enzyme defect and the reaction catalysed by it.
 - iii. Write the biochemical basis for the
 - a. Light coloured hair and skin
 - b. Mousy body odour
 - c. Neurological manifestation
 - iv. Describe the steps for synthesis of any two biologically important compounds derived from tyrosine.

Short notes

(5X8=40)

2. Enlist complications of diabetes mellitus and discuss the biochemical basis of any one of the complications. (3+2)
3. Describe the formation and fate of ketone bodies. Add a note on ketosis. (3+2)
4. Discuss glycolysis in RBCs and the fate of its end product. (3+2)
5. Discuss the development of fatty liver along with responsible factors. What are lipotropic factors? (3+2)
6. What is Transamination reaction? Transaminases have clinical importance- Explain (2+3)
7. What is Sickle cell anaemia? What causes sickling of the cell and in which condition it is more favoured (2+3)
8. Write short note on Glucose Alanine and Cori's cycle. (2.5 + 2.5)
9. Explain why, human adipose tissue is not a good site for denovo synthesis of fatty acids. (5)

SECTION – B (50 MARKS)

1. Discuss formation and detoxification of ammonia. How hyperammonaemia causes toxicity to brain? (6+4=10)
2. Write short notes on non-functional plasma enzymes with diagnostic importance (5)
3. Compare and contrast (2X2.5=5)
 - i. Ceruloplasmin and Transferrin
 - ii. Menke's disease and Wilson's disease
4. Justify the given statements (2X2.5=5)
 - i. Digestive enzymes belong to class III of IUB classification of enzymes.
 - ii. V_{max} remain unaltered in competitive inhibition of enzyme.
5. Justify the given statements (2X2.5=5)
 - i. Vitamin D is more like hormone than a vitamin
 - ii. Vitamin C helps in iron absorption
6. Which plasma protein is mostly responsible for plasma oncotic pressure and why? Mention other functions of this protein (2+3=5)
7. Describe the different factors affecting enzyme activities (5)
8. Describe Wald's visual cycle with suitable diagram (5)
9. What is the role of ADH in physiological purpose? How aldosterone helps in water and electrolyte balance. (5)
