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# MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

## FIRST MBBS DEGREE EXAMINATION – JULY 2004

### SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Thursday, July 08, 2004

Time: 10:30 – 13:00 Hours Maximum Marks: 40

- **Illustrate your answers with diagrams and flow charts wherever appropriate**
- **Write brief, clear, relevant and legible answers**

1. Describe the denovo synthesis of fatty acids including acetyl CoA transport.

(6 marks)

2. Classify enzymes with one example for each class.

(3 marks)

3A. Write the reactions of the oxidative phase of HMP shunt.

3B. Write the significance of the HMP shunt.

(3 marks)

4. Indicate the diagnostic significance of:
   a) SGOT (AST) b) Alkaline phosphatase
   c) Serum Amylase d) Creatine kinase

(2 marks)

5. Give an example and composition of:
   a) Glycerophospholipid b) Sphingophospholipid
   c) Neutral lipid d) Disaccharide

(2 marks)

6. Describe the oxidation of acetyl CoA in the TCA cycle. Add a note on its energetics and amphibolic role.

(4+2 = 6 marks)

7. Explain secondary and tertiary structure of proteins.

(3 marks)

8. Write the sequence of electron carriers in the ETC. Add a note on uncouplers.

(2+1 = 3 marks)

9. Mention the biochemical basis for the development of clinical features in:
   a) Familial hypercholesterolemia b) Galactosemia

(1×2 = 2 marks)

10. Trace the pathway of biosynthesis of adrenaline from tyrosine.

(2 marks)

11. Give reasons for the following:

11A. Cori's cycle is incomplete in von Gierke's disease.

11B. A patient with Mc Ardle's syndrome cannot perform strenuous exercise.

11C. Steatorrhoea is observed in patients with obstructive jaundice.

11D. Dicoumarol is used as an anticoagulant in vivo.

(1×4 = 4 marks)

12. Explain the formation, transport and fate of ammonia.

(4 marks)

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# MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

## FIRST MBBS DEGREE EXAMINATION – JULY 2004

### SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Friday, July 09, 2004

Time: 10:30 – 13:00 Hours Maximum Marks: 40

- **Illustrate your answers with diagrams and flow charts wherever appropriate**
- **Write brief, clear, relevant and legible answers**

1. Explain the process of transcription. Give example of any two post transcriptional modifications.

(4+1 = 5 marks)

2. Explain the consequences of point mutation with suitable examples.

(3 marks)

3. Describe the elongation phase of translation with the help of diagrams.

(2 marks)

4. Write brief notes on:
   a) DNA finger printing
   b) Dietary fiber
   c) Oncogenes
   d) Protein calorie malnutrition.

(2×4 = 8 marks)

5. Discuss the applications of recombinant DNA technology.

(2 marks)

6. Explain the biochemical functions and deficiency manifestations of:
   a) Ascorbic acid b) Niacin c) Folic acid.

(2×3 = 6 marks)

7. Explain the role of kidney in acid base balance.

(2 marks)

8. Describe secondary active transport with an example.

(2 marks)

9. Describe any two liver function tests.

(2 marks)

10. Give reasons for the following:
    a) Overactivity of PRPP synthetase causes gout.
    b) 5- fluoro uracil is used as an anticancer agent.
    c) Photosensitivity is not observed in acute intermittent porphyria.
    d) Microcytic hypochromic anemia is observed in patients with achlorhydria.

(1×4 = 4 marks)

11. Write two biochemical functions for each of the following:
    a) Zinc b) Magnesium c) Iron d) Phosphorus.

(2 marks)

12. Describe the biochemical basis for:
    a) Diabetic ketoacidosis is associated with hyperkalemia
    b) Fouchet's test with urine is positive in patients with obstructive jaundice.

(1×2 = 2 marks)

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# MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

## FIRST MBBS DEGREE EXAMINATION – SEPTEMBER 2004

### SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Thursday, September 23, 2004

Time: 10:30 – 13:00 Hours | Maximum Marks: 40

- **Illustrate your answers with diagrams and flow charts wherever appropriate**
- **Write brief, clear, relevant and legible answers**

1. Explain the reactions of the hexose monophosphate shunt pathway. State the significance of this pathway.

(4+2 = 6 marks)

2. What are the features of competitive inhibition? Write 2 clinical applications of competitive inhibition.

(3 marks)

3. Classify lipoproteins and explain their role in the transport of lipids.

(3 marks)

4. Classify carbohydrates giving suitable examples.

(2 marks)

5. Calculate the energetics for the complete oxidation of palmitic acid.

(2 marks)

6. Write briefly on
6A. Bile salts.
6B. Coenzymes.

(2+2 = 4 marks)

7. Give an account of the metabolism of glycine in the body.

(6 marks)

8. Explain the chemiosmotic hypothesis of oxidative phosphorylation.

(3 marks)

9. Describe the secondary structure of proteins.

(3 marks)

10. Name the metabolic defects in the following disorders
10A. Phenylketonuria.
10B. Homocystinuria.
10C. Maple syrup urine disease.
10D. Albinism.

(2 marks)

11. What are the biochemical changes taking place in starvation?

(2 marks)

12. Write short notes on
12A. Prostaglandins.
12B. Isoenzymes.

(2+2 = 4 marks)

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# MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

## FIRST MBBS DEGREE EXAMINATION – SEPTEMBER 2004

### SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Friday, September 24, 2004

Time: 10:30 – 13:00 Hours Maximum Marks: 40

- **Illustrate your answers with diagrams and flow charts wherever appropriate**
- **Write brief, clear, relevant and legible answers**

1. Explain the reactions by which uric acid is formed in the body. Add a note on hyperuricemia and its consequences.

(3+3 = 6 marks)

2. Draw a labeled diagram of tRNA molecule. What are the functions of its various arms?

(3 marks)

3. What is post translational modification? Highlight its significance with the help of two examples.

(1+2 = 3 marks)

4. Explain briefly the technique of polymerase chain reaction.

(2 marks)

5. Explain induction with one example.

(2 marks)

6. Describe the coenzymic function and deficiency symptoms of

6A. Thiamine.

6B. Vitamin K.

(2+2 = 4 marks)

7. How is cholecalciferol formed in the body? What is its function?

(6 marks)

8. Name three porphyrias. What is the enzyme defect in each one of them?

(3 marks)

9. How is bilirubin conjugated and what is its fate?

(1+2 = 3 marks)

10. Define R.Q. Why is it decreased in starvation?

(1+1 = 2 marks)

11. Write a note on Southern blotting.

(2 marks)

12. Write short notes on:

12A. Genetic Code.

12B. Bicarbonate buffer.

(2+2 = 4 marks)