

MANIPAL ACADEMY OF HIGHER EDUCATION
(Deemed University)

FIRST MBBS DEGREE EXAMINATIONS – JANUARY 2003

SUBJECT: BIOCHEMISTRY– PAPER I

Tuesday, January 14, 2003

Time available: 3 Hours

Maximum Marks: 50

➤ **Illustrate your answers with diagrams and flow charts wherever appropriate**

➤ **Write brief, clear, relevant and legible answers**

1A. What are coenzymes? Name four coenzymes and give examples of enzyme reactions where each coenzyme takes part.

(2+2+4 = 8 marks)

2. Describe Rapaport-Leubering cycle. What is its significance?

(3+1 = 4 marks)

3. How are plasma lipoproteins classified? What are their functions?

(2+2 = 4 marks)

4. Write short notes on :

4A. Essential fatty acids

4B. Galactosemia

4C. Km value

(3 x 3 = 9 marks)

5. Describe Krebs citric acid cycle. Give an account of the energetics. Add a note on the inhibitors.

(5+2+1 = 8 marks)

6. Describe the structure of immunoglobulins.

(4 marks)

7. Explain the chemiosmotic mechanism of oxidative phosphorylation.

(4 marks)

8. Write short notes on

8A. Proteolytic enzymes of pancreatic juice

8B. Uncouplers

8C. Creatinine

(3 x 3 = 9 marks)



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FIRST MBBS DEGREE EXAMINATIONS – JANUARY 2003

SUBJECT: BIOCHEMISTRY- PAPER II

Wednesday, January 15, 2003

Time available: 3 Hours

Maximum Marks: 50

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

1. Outline the phases of activation, initiation, elongation and termination of biosynthesis of protein.
(2+2+2+2=8 marks)
2. Write short notes on:
 - 2A. Oncogenes
 - 2B. Repression
 - 2C. Hybridoma technology
 - 2D. Restriction endonuclease
 - 2E. Southern blot technique(4+4+3+3+3=17 marks)
3. What is the normal pH of plasma? Explain the role of plasma buffers and renal mechanism in maintaining the acid-base balance of the body.
(1+3+4=8 marks)
4. Write short notes on:
 - 4A. Catabolism of heme
 - 4B. Metabolic role of pyridoxal phosphate
 - 4C. Ceruloplasmin
 - 4D. Absorption of vitamin B-12
 - 4E. Fluid mosaic model of cell membrane.(3x5=15 marks)
5. Write normal blood level of the following:
 - 5A. Bicarbonate
 - 5B. Sodium
 - 5C. Potassium
 - 5D. Uric acid.($\frac{1}{2} \times 4 = 2$ marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
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FIRST MBBS DEGREE EXAMINATIONS – JULY 2003

SUBJECT: BIOCHEMISTRY– PAPER I

Monday, July 14, 2003

Time available: 3 Hours

Maximum Marks: 50

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

- 1A. Give an account of the effect of substrate concentration, pH and temperature on enzymes.
1B. Explain the significance of K_m and V_{max} .
(4+1+1+2=8 marks)
2. Name any 4 mucopolysaccharides and indicate their location in the body. Name the monosaccharide units present in any one of them.
(2+2=4 marks)
3. Explain the actions of lipotropic factors with examples.
(4 marks)
4. How glucuronic acid is formed in the body. Explain its significance.
(4 marks)
5. Classify phospholipids with examples. Write the functions of phospholipids.
(3+1=4 marks)
6. Describe glycine metabolism. Write the various compounds formed from glycine. Add a note on glycinuria.
(4+3+1=8 marks)
7. Classify proteins based on their functions.
(4 marks)
8. Explain the amphibolic role of TCA cycle.
(5 marks)
9. Write short notes on
9A. Chemiosmotic theory
9B. Arrangement of electron transport chain
9C. Uncouplers
(3+3+3=9 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION

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FIRST MBBS DEGREE EXAMINATIONS –JULY 2003**SUBJECT: BIOCHEMISTRY – PAPER II**

Tuesday, July 15, 2003

Time available: 3 Hours

Maximum Marks: 50

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- Illustrate your answers with diagrams and flow charts wherever appropriate
- Write brief, clear, relevant and legible answers
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1A. Describe the structure and functions of transfer RNA.

1B. Applications of restriction endonucleases.

((3+2)+3=8 marks)

2. Write short notes on:

2A. Polymerase chain reaction and its applications

2B. Post transcriptional modifications

2C. Detoxification by reduction and hydrolysis

2D. Active transport

2E. Western blotting

(3+3+3+3+3=15 marks)

3. Describe the synthesis of pyrimidine nucleotides.

(5 marks)

4. Write short notes on:

4A. Abnormal hemoglobins

4B. Wald's visual cycle

4C. Biological value of protein

4D. Role of iodine in the body

4E. Caloric value of food stuff

(4+4+3+3+3=17 marks)

5. Name the acid-base disorder associated with uncontrolled diabetes. What are the biochemical abnormalities observed? Explain the biochemical bases.

(1+2+2=5 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION

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FIRST MBBS DEGREE EXAMINATION – DECEMBER 2003**SUBJECT: BIOCHEMISTRY- PAPER I**

Monday, December 22, 2003

Time available: 3 Hours

Maximum Marks: 50

➤ Illustrate your answers with diagrams and flow charts wherever appropriate

➤ Write brief, clear, relevant and legible answers

1. Enumerate the glycolytic pathway with energetics and 2 inhibitors.
(5 + 2 + 1 = 8 marks)
2. Classify enzymes with one example for each class.
(5 marks)
3. Write short notes on:
 - 3A. Galactosemia
 - 3B. Essential fatty acids
 - 3C. Fluid mosaic model
 - 3D. Importance of HMP shunt pathway.(4 × 3 = 12 marks)
4. Enumerate the steps of TCA cycle with inhibitors and energetics.
(5 + 2 + 1 = 8 marks)
5. Name the inhibitors of electron transport chain and indicate the site at which they inhibit.
(5 marks)
6. Write short notes on:
 - 6A. Transamination reaction
 - 6B. Immunoglobulins
 - 6C. Digestion of proteins.(4 × 3 = 12 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION

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FIRST MBBS DEGREE EXAMINATION – DECEMBER 2003**SUBJECT: BIOCHEMISTRY – PAPER II**

Tuesday, December 23, 2003

Time available: 3 Hours

Maximum Marks: 50

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- Illustrate your answers with diagrams and flow charts wherever appropriate
- Write brief, clear, relevant and legible answers
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- 1A. Explain the causes and consequences of various types of genetic mutations with examples.
- 1B. What are oncogenes?

(6 + 2 = 8 marks)

2 Write short notes on:

- 2A. mRNA
- 2B. Cell cycle
- 2C. Functions of nucleotides.

(4 + 3 + 4 = 11 marks)

3. Write clinical applications of following techniques:

- 3A. DNA finger printing
- 3B. Gene therapy
- 3C. Recombinant DNA technology.

(2 × 3 = 6 marks)

4. Write briefly on formation, sources, RDA, biochemical functions of vitamin D.

(3 + 1 + 1 + 3 = 8 marks)

5. Write short notes on:

- 5A. Importance of conjugation reactions
- 5B. Balanced diet
- 5C. Antioxidant vitamins.

(4 × 3 = 12 marks)

6. What is the biochemical basis of:

- 6A. Acute intermittent porphyria
- 6B. Thalassemia.

(3 + 2 = 5 marks)

