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# MANIPAL UNIVERSITY

## MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2008

### SUBJECT: PAPER I: BIOORGANIC AND BIOPHYSICAL CHEMISTRY AND BIOCHEMICAL TECHNIQUES

Tuesday, April 01, 2008

Time: 3 Hrs.

Max. Marks: 100

**Answer ALL the questions.**

1. Describe in detail the methods of determining the base sequence of DNA. Discuss its application in Medicine.

(25 marks)

2A. Describe the detection and measurement of radioactivity. Discuss the applications of radioisotopes in medicine.

2B. Give the details of immuno gel diffusion.

(15+10 = 25 marks)

3. Write short notes on:

3A. Ultra centrifugal techniques

3B. Henderson - Hasselbalch equation

3C. Structure of insulin

(10×3 = 30 marks)

4. Write short notes on:

4A. High energy compounds

4B. HPLC

(10×2 = 20 marks)

**MANIPAL UNIVERSITY**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2008**  
**SUBJECT: PAPER II: INTERMEDIARY METABOLISM**

Wednesday, April 02, 2008

Time: 3 Hrs.

Max. Marks: 100

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*✍* **Answer ALL the questions.**

1. Describe the hormonal regulation of blood glucose level. Discuss the metabolic pathways that are active in the post prandial phase.

(25 marks)
  
2. A patient with episodes of diarrhoea and hypertension was found to excrete large amounts of 5- HIAA in urine. Give the biochemical basis for clinical features you would expect in this patient. Discuss the intermediary metabolism of associated amino acid.

(25 marks)
  
3. How are ketone bodies formed and utilized in the body? Explain the biochemical changes occurring in ketoacidosis. Discuss the biochemical investigations useful in evaluation of ketoacidosis.

(20 marks)
  
4. Write short notes on:
  - 4A. DNA repair mechanisms
  - 4B. RNA polymerase in eukaryotes and prokaryotes
  - 4C. Metabolic significance of pyruvate

(10+10+10 = 30 marks)

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## MANIPAL UNIVERSITY

MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2008

SUBJECT: PAPER III: ENZYMES, NUTRITION AND SPECIALIZED TISSUES

Thursday, April 03, 2008

Time: 3 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

1. Describe the features of active site on enzymes. Describe the role of amino acid residues at the active site. Enumerate the methods to elucidate the amino acids present at the active site.  
(30 marks)
2. Give a detailed account of the chemistry, sources, transport, storage, functions and deficiency manifestations of vitamin A. What are the biochemical tests useful to assess vitamin A status?  
(25 marks)
3. Discuss the nutritional importance of proteins. Discuss the parameters available to assess dietary protein quality.  
(20 marks)
4. Write short notes on:
  - 4A. Antifolate drugs
  - 4B. Collagen
  - 4C. Pellagra
  - 4D. Obesity

(7+6+6+6 = 25 marks)

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# MANIPAL UNIVERSITY

MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2008

SUBJECT: PAPER IV: CLINICAL BIOCHEMISTRY

Friday, April 04, 2008

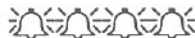
Time: 3 Hrs.

Max. Marks: 100

*✍* Answer ALL the questions.

1. How are serum lipoproteins formed and metabolized? Describe briefly how will you biochemically investigate a patient with hyperlipoproteinemia.  
(20 marks)
2. Discuss the various biochemical abnormalities which may occur in uncontrolled diabetes mellitus.  
(20 marks)
3. Describe the generation and scavenging of free radicals. Add a note on the role of free radicals in health and disease.  
(30 marks)
4. Write briefly on:
  - 4A. T-lymphocytes
  - 4B. Hepatic porphyrias
  - 4C. Tumour markers

(10×3 = 30 marks)



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**MANIPAL UNIVERSITY**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2008**  
**SUBJECT: PAPER I: BIOORGANIC AND BIOPHYSICAL CHEMISTRY AND**  
**BIOCHEMICAL TECHNIQUES**

Monday, October 06, 2008

Time: 3 Hrs.

Max. Marks: 100

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**Answer ALL the questions.**

1. Describe the biochemical structure of adult hemoglobin. Explain with suitable examples how the structural features help in the functioning of this molecule.  

(25 Marks)
  
2. Describe the salient features of hybridoma technology. Add a note on the utility of monoclonal antibodies in biochemistry.  

(25 marks)
  
3. Explain the principles and applications of:
  - 3A. Blotting techniques.
  - 3B. Polymerase chain reaction.

(10+10 = 20 marks)
  
- 4A. Compare and contrast the separation methods based on charge with those based on size and shape of the biomolecules.
- 4B. Describe the structure and function of compound lipids.  

(15+15 = 30 marks)

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**MANIPAL UNIVERSITY**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2008**

**SUBJECT: PAPER II: INTERMEDIARY METABOLISM**

Tuesday, October 07, 2008

Time: 3 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

1. Describe the various aspects of metabolism of aromatic amino acids.  
(20 marks)
  
2. Describe how lipids are transported in the blood. Add a note on the disorders of lipid transport.  
(30 marks)
  
3. Discuss the salient features of the process of translation. Add a note on the inhibitors of this process.  
(20 marks)
  
4. Briefly describe:
  - 4A. Metabolic changes in uncontrolled diabetes mellitus.
  - 4B. Formation and utilization of adenosine triphosphate.

(15+15 = 30 marks)



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## MANIPAL UNIVERSITY

### MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2008

#### SUBJECT: PAPER III: ENZYMES, NUTRITION AND SPECIALIZED TISSUES

Thursday, October 09, 2008

Time: 3 Hrs.

Max. Marks: 100

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*✍* Answer ALL the questions.

1. Describe the various factors, which affect enzyme activity. Support your answer with suitable examples.

(20 marks)

2. Discuss the structure and biochemical roles of anterior pituitary hormones.

(20 marks)

3. Describe the salient features of metabolism of iron and calcium. Add a note on the clinical syndromes resulting from increase and decrease of these minerals levels in the body.

(30 marks)

4. Discuss briefly:

4A. Malabsorption syndromes.

4B. Transport across biomembranes.

(15+15 = 30 marks)

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## MANIPAL UNIVERSITY

### MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2008

#### SUBJECT: PAPER IV: CLINICAL BIOCHEMISTRY

Friday, October 10, 2008

Time: 3 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

1. Discuss how would you biochemically investigate a patient with uncontrolled diabetes mellitus.

(30 marks)

2. Discuss how would you plan and implement total quality assurance programme in a clinical biochemistry lab.

(30 marks)

3. Write brief notes on:

3A. Oncogenes.

3B. T-lymphocytes.

3C. CSF analysis.

3D. Free radicals.

(5×4 = 20 marks)

4. Discuss the role of enzyme estimation in patient diagnosis and monitoring.

(20 marks)

