

## MANIPAL UNIVERSITY

MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2014

SUBJECT: PAPER I: PHYSICAL ORGANIC ASPECTS OF BIOCHEMISTRY,  
BIostatistics, BIOCHEMICAL TECHNIQUES

Tuesday, April 01, 2014

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

✍ Long Essays.

1. Give a detailed account of principle and types of ion selective electrodes.

(15 marks)

2. Explain the principle and techniques of various ELISA techniques.

(15 marks)

3. Write short notes on:

3A. X-ray crystallography

3B. HPLC

3C. Blood buffers

3D. Collagen structure

3E. Isoenzymes

3F. Electrochemiluminescence

3G. Arachidonic acid

3H. Glycolipids

3I. High energy compounds

3J. Applications of radioisotopes in diagnostics

(7×10 = 70 marks)



## MANIPAL UNIVERSITY

## MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2014

SUBJECT: PAPER II: CELL PHYSIOLOGY, MOLECULAR BIOLOGY, HUMAN GENETICS

Wednesday, April 02, 2014

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

✍ Long Essays.

1. Describe the mechanisms of blood glucose regulation. Describe the diagnostic approaches for hyperglycemia.

(15 marks)

2. Describe the source, absorption, daily requirements, metabolism, functions and deficiency manifestations of Vitamin B12.

(15 marks)

3. Write short notes on :

3A. Describe the source, daily requirements, and absorption of iron.

3B. Explain why patients with homocysteinemia are treated with folic acid.

3C. LDL metabolism

3D. Biogenic amines

3E. Pathways of alcoholic metabolism and mechanism of action of disulfiram.

3F. Salvage pathways for Purine nucleotide synthesis.

3G. Describe the principles of dietary management during pregnancy and lactation.

3H. Anti vitamins

3I. Assessment of nutritional quality of a protein.

3J. Discuss the physiological importance of :

i) RQ      ii) SDA

(7×10 = 70 marks)



**MANIPAL UNIVERSITY****MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2014****SUBJECT: PAPER III: INTERMEDIARY METABOLISM, MACRO AND  
MICRONUTRIENTS, INBORN ERRORS OF METABOLISM**

Thursday, April 03, 2014

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays.**

1. Discuss the pathophysiology and complications of Type II diabetes mellitus. (15 marks)
2. Discuss the biochemical investigations in a new born baby presenting with hyperammonemia. (15 marks)

**3. Write short notes on:**

- 3A. Metabolic syndrome
- 3B. Mucopolysaccharidosis - types and detection
- 3C. Role of enzymes in myocardial infarction
- 3D. Renal regulation of pH
- 3E. Laboratory diagnosis of thalassemia
- 3F. Analysis of Cerebrospinal fluid
- 3G. Importance of Parathormone estimation
- 3H. Lesch Nyhan Syndrome
- 3I. Infertility panel
- 3J. D-dimer

(7×10 = 70 marks)



**MANIPAL UNIVERSITY****MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2014****SUBJECT: PAPER IV: CLINICAL BIOCHEMISTRY, HUMAN NUTRITION,  
ENDOCRINOLOGY AND IMMUNOLOGY**

Friday, April 04, 2014

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays.**

1. Explain the process of transcription and post transcriptional modifications. (15 marks)
  
2. A 40 year old lady diagnosed with breast cancer had a family history of breast cancer and ovarian cancer for two of her relatives. What cancer gene might be associated with the condition and explain the regulation of gene expression. (15 marks)

**3. Write short notes on:**

- 3A. Mitochondrial DNA diseases
- 3B. FISH
- 3C. Genetic code
- 3D. DNA repair mechanisms
- 3E. Cell cycle
- 3F. Evaluation of an autoanalyzer
- 3G. Human genome project
- 3H. Westgard rules
- 3I. Human immunodeficiency virus
- 3J. Importance of genetic counseling

(7×10 = 70 marks)

