

MANIPAL ACADEMY OF HIGHER EDUCATION
MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2018
SUBJECT: PAPER I: GENERAL BIOCHEMISTRY & INSTRUMENTATION

Monday, April 02, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

Answer ALL the questions.

Long Essays:

1. Explain the structural organization of proteins with details of amino acid sequencing. Mention the disorders attributed to the derangement of the same.

(15 marks)

2. Describe the various types of immunoassays giving their principles and applications.

(15 marks)

3. **Write briefly on:**

3A. Cell cycle

3B. Transport across cell membranes

3C. Polymerase chain reaction

3D. Acute phase proteins

3E. Glycosaminoglycans – structure and functions

3F. Southern blotting and its applications

3G. Regulation of enzyme activity

3H. Ion selective electrodes

3I. Structure, classes and composition of lipoproteins

3J. Osmolality and its measurement

(7 marks × 10 = 70 marks)



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MANIPAL ACADEMY OF HIGHER EDUCATION
MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2018
SUBJECT: PAPER II: METABOLISM AND NUTRITION

Tuesday, April 03, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the mechanisms of blood glucose regulation. List the causes for hyperglycemia and hypoglycemia.

(15 marks)

2. Describe the biochemical role of folic acid in one carbon metabolism.

(15 marks)

3. **Short essay:**

3A. What are pro vitamins? Give the biochemical reactions of conversion of a pro vitamin to a vitamin.

3B. Why does vitamin C deficiency cause anemia and poor wound healing? Explain with appropriate biochemical reactions.

3C. Biochemical role of zinc.

3D. Explain how serine and threonine are glucogenic amino acids?

3E. Digestion and absorption of lipids.

3F. Eicosanoids synthesis

3G. Pyruvate oxidation

3H. Describe a balanced diet for a sedentary vegetarian female.

3I. HDL metabolism

3J. Degradation of purine nucleotides.

(7 marks × 10 = 70 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2018
SUBJECT: PAPER III: CLINICAL BIOCHEMISTRY

Wednesday, April 04, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the laboratory diagnosis of Diabetes Mellitus. Explain the basis of chronic complications of Diabetes Mellitus.

(15 marks)

2. Explain the various metabolic pathway that occur in the erythrocytes.

(15 marks)

3. **Write short answers on:**

3A. Analysis of renal calculi

3B. Prion disease

3C. Pancreatic function test

3D. Placental hormones

3E. Respiratory acidosis

3F. Significance of D-dimer estimation

3G. Van den Bergh's test

3H. NPN substances in urine

3I. Phenylketonuria

3J. Diagnostic significance of free T3 and free T4 estimation

(7 marks × 10 = 70 marks)



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MANIPAL ACADEMY OF HIGHER EDUCATION
MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2018
SUBJECT: PAPER IV: MOLECULAR BIOLOGY, BIOTECHNOLOGY & RECENT
ADVANCES IN CLINICAL BIOCHEMISTRY

Thursday, April 05, 2018

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Discuss the regulation of gene expression.

(15 marks)

2. Describe the accreditation process of a clinical laboratory.

(15 marks)

3. **Write Briefly on:**

3A. Westgard's rules

3B. Establishing reference range

3C. Mechanisms and consequences of DNA damage

3D. Post translational modifications

3E. Regulation of cell cycle

3F. Point mutations

3G. Preparation and storage of in-house quality control material

3H. Students t test

3I. Isolation and purification of DNA

3J. Mechanism of action of antibiotics

(7 marks × 10 = 70 marks)

