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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER I: GENERAL BIOCHEMISTRY & INSTRUMENTATION**

Tuesday, April 02, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Explain the different structural levels of organization of proteins and add a note on amino acid sequencing.

(15 marks)

2. Explain the structure of the cell and the functions of organelles.

(15 marks)

3. **Write briefly on:**

3A. HPLC – Principles & applications

3B. Autoanalysers

3C. Transgenic animals

3D. Multiple myeloma

3E. Food additives and adulterants

3F. Lipoproteins – classifications components & functions.

3G. Applications of radioisotopes

3H. Cell cycle

3I. High energy compounds

3J. Base sequencing of DNA

(7 marks × 10 = 70 marks)



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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER II: METABOLISM AND NUTRITION**

Wednesday, April 03, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe HMP shunt pathway. State its significance. How is it regulated?  
(15 marks)

2. Explain  $\beta$ -oxidation of saturated fatty acids  
(15 marks)

3. **Write short answers on:**

3A. Biochemical role of copper

3B. Diet formulation in anemia

3C. Hypervitaminoses

3D. Salvage pathway of nucleotides

3E. Formation of bile salts and their functions

3F. Chain breaking antioxidants

3G. Balanced diet

3H. Wald's visual cycle

3I. Lipoprotein lipase

3J. Cori's cycle

(7 marks  $\times$  10 = 70 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER III: CLINICAL BIOCHEMISTRY**

Thursday, April 04, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Classify diabetes mellitus. Discuss the laboratory diagnosis of diabetes mellitus and its metabolic complications.

(15 marks)

2. Classify hormones. Describe the mechanism of action of steroid hormones with an appropriate example.

(15 marks)

3. **Write short notes on:**

3A. Biochemical tests in myocardial infarction.

3B. Phenylketonuria

3C. Interleukins

3D. Biochemical process in atherosclerosis.

3E. eGFR

3F. Tests to diagnose hemoglobinopathies.

3G. Detoxification

3H. Biochemical tests for fertility in females.

3I. Antenatal screening for Down's syndrome.

3J. Biochemical tests to monitor a patient on hemodialysis.

(7 marks × 10 = 70 marks)



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# MANIPAL ACADEMY OF HIGHER EDUCATION

MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2019

SUBJECT: PAPER IV: MOLECULAR BIOLOGY, BIOTECHNOLOGY & RECENT  
ADVANCES IN CLINICAL BIOCHEMISTRY

Friday, April 05, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Discuss the DNA damage and repair mechanisms. (15 marks)

2. Describe the concept and methods employed in quality control programme of a clinical biochemistry laboratory. (15 marks)

3. **Write briefly on:**

3A. Karyotyping

3B. Biochemistry of AIDS

3C. Oncogenes

3D. Genetic counselling

3E. DNA probes

3F. Operon concept

3G. Evaluation of new diagnostic procedure.

3H. Role of nucleic acids in the diagnosis of infectious diseases.

3I. Gene bank

3J. Human genome project

(7 marks × 10 = 70 marks)

