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## MANIPAL UNIVERSITY

### MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2016

SUBJECT: PAPER I: GENERAL BIOCHEMISTRY & INSTRUMENTATION

Monday, October 17, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ Answer ALL the questions.

✍ Long Essays:

1. Discuss the principles of electrophoresis and its application in biochemistry and molecular biology.

(15 marks)

2. Discuss the mechanisms of action of enzymes in detail.

(15 marks)

3. Write briefly on:

3A. Ultra centrifugal techniques

3B. Mucopolysaccharides

3C. Ion selective electrodes

3D. Monoclonal antibodies

3E. High energy compounds

3F. Immobilized enzymes

3G. Transgenic animals

3H. Osmometry

3I. Principles and applications of thin layer chromatography

3J. Collagen

(7 marks × 10 = 70 marks)



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## MANIPAL UNIVERSITY

### MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2016

#### SUBJECT: PAPER II: METABOLISM AND NUTRITION

Tuesday, October 18, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

✍ Long Essays:

1. Explain the sources, dietary requirements, physiological role and deficiency manifestation of Vitamin A.

(15 marks)

2. Plan a balanced diet for 80 kg diabetic patient whose ideal body weight is 65 kg.

(15 marks)

3. Write briefly on:

3A. Beri Beri

3B. Total parenteral nutrition

3C. Functions of calcium

3D. Protein quality

3E. Glycolysis

3F. Metabolism in starvation

3G. Protein energy malnutrition

3H. Dietary fibers

3I.  $\beta$  oxidation of fatty acids

3J. Products formed from Tyrosine

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



**MANIPAL UNIVERSITY**  
**MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2016**  
**SUBJECT: PAPER III: CLINICAL BIOCHEMISTRY**

Wednesday, October 19, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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☞ Answer ALL the questions.

☞ Long Essays:

1. Classify hyperlipoproteinemias. Discuss the laboratory diagnosis to differentiate the hyperlipoproteinemias.

(15 marks)

2. Discuss renal function tests to be carried out in a chronic patient. Explain eGFR.

(15 marks)

3. Write short notes on:

3A. Tests to screen gestational diabetes

3B. Hepatobiliary functions in alcoholic cirrhosis

3C. Gastrointestinal hormones

3D. Tests to diagnose hemoglobinopathies

3E. Compare and contrast metabolism of lens and erythrocytes

3F. Coagulation pathway

3G. Hormone regulation of calcium homeostasis

3H. Mucopolysaccharides

3I. Malabsorption syndrome and their lab diagnosis

3J. Inherited disorders of tyrosine metabolism

(7 marks × 10 = 70 marks)



**MANIPAL UNIVERSITY****MD (BIOCHEMISTRY) DEGREE EXAMINATION – OCTOBER 2016****SUBJECT: PAPER IV: MOLECULAR BIOLOGY, BIOTECHNOLOGY & RECENT  
ADVANCES IN CLINICAL BIOCHEMISTRY**

Thursday, October 20, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the process of eukaryotic translation. Write the details of post translational modifications and inhibitors of translation. (15 marks)

2. Explain the hybridoma technology and applications of monoclonal antibodies in clinical chemistry. (15 marks)

3. **Short Answer Questions:**

3A. Polymerase chain reaction

3B. Westgard rules

3C. Heat shock proteins

3D. Gene therapy

3E. Components of research protocol

3F. Nucleotide excision repair system

3G. Biochemical mechanisms of carcinogenesis

3H. T-lymphocytes

3I. Students 't' test

3J. Phagocytosis

(7 marks × 10 = 70 marks)

