

**MANIPAL UNIVERSITY****MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2017****SUBJECT: PAPER I: GENERAL BIOCHEMISTRY & INSTRUMENTATION**

Monday, April 03, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Explain the principle and types of electrophoresis. (15 marks)

2. Explain structure- function relationships of proteins with three examples. (15 marks)

3. **Write short essay on:**

3A. Explain applications of RFLP with two examples.

3B. Biochemical importance of polyunsaturated fatty acids.

3C. Principle and applications of atomic absorption spectroscopy.

3D. Explain functions of membrane bound proteins with two examples.

3E. Explain the technique of preparation of monoclonal antibodies.

3F. Explain two mechanisms by which enzymes act.

3G. Explain significance of nucleotide analogues with two examples.

3H. Explain amphipathic lipids with four examples.

3I. Isomerism in monosaccharides.

3J. Biochemical applications of radioisotopes.

(7 marks × 10 = 70 marks)



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## MANIPAL UNIVERSITY

MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2017

SUBJECT: PAPER II: METABOLISM AND NUTRITION

Tuesday, April 04, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Explain mechanism of action of coenzymes with three examples.

(15 marks)

2. Explain metabolic changes occurring in a type II diabetic patient of ten years duration who is on irregular treatment and follow up.

(15 marks)

3. **Write short essay on:**

3A. Explain five basic food groups.

3B. Explain glucose metabolism in well fed state.

3C. Write reactions of TCA cycle and its importance.

3D. Explain formation of bile acids.

3E. Explain formation of three specialized products of glycine.

3F. Explain roles of antioxidant vitamins.

3G. Explain two disorders of purine degradation.

3H. Phenylketonuria.

3I. Galactosemia.

3J. Heme catabolism.

(7 marks × 10 = 70 marks)



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# MANIPAL UNIVERSITY

## MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2017

### SUBJECT: PAPER III: CLINICAL BIOCHEMISTRY

Wednesday, April 05, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Discuss the biochemical monitoring of pregnancy. Add a note on monitoring of high risk pregnancy.

(15 marks)

2. A deeply jaundiced patient is brought to the casualty in a coma. He had 3 episodes of hematemesis in the past 24 hours. What are the biochemical laboratory investigations which need to be done in order to successfully treat and manage the patient? Justify your selection of the tests.

(15 marks)

3. **Write short notes on:**

3A. HbA1C

3B. Respiratory acidosis

3C. Detoxification

3D. Biochemical tests to monitor a patient on hemodialysis

3E. Biochemistry of skeletal muscle contraction

3F. Glycogen Storage disorder

3G. Urine dip stick

3H. Adrenocortical hormones

3I. Clinical significance of D-dimer and fibrinogen

3J. Clinical importance of monitoring serum electrolyte levels

(7 marks × 10 = 70 marks)





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**MANIPAL UNIVERSITY**

**MD (BIOCHEMISTRY) DEGREE EXAMINATION – APRIL 2017**

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

Thursday, April 06, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

**Answer ALL the questions.**

**Long Essays:**

1. Describe the process of eukaryotic transcription. Write the details of post transcriptional modifications and inhibitors of transcription.  
(15 marks)
2. Explain the hybridoma technology and applications of monoclonal antibodies in clinical chemistry.  
(15 marks)

**Write short essay on:**

- 3A. DNA repair mechanisms
- 3B. Westgard rules
- 3C. Bioinformatics
- 3D. Vectors used in Gene therapy
- 3E. Significance of sample size in a research study
- 3F. Application of RFLPs and VNTRs
- 3G. Biochemical mechanisms of apoptosis
- 3H. Tryptophan operon
- 3I. Use of Correlation coefficient in data analysis
- 3J. Phagocytosis

(7 marks × 10 = 70 marks)

