MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2002

PAPER I: CHEMICAL NATURE AND METHODS OF STUDY OF BIOCHEMICAL COMPOUNDS AND ENZYMES

Monday, July 01, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer ANY FIVE Questions**
- **All questions carry equal Marks**
- **Write answers that are brief, clear, relevant and legible**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Explain the principle and applications of spectrophotometry.

2. Explain the structure and types of DNA. Add a note on Chargaff's rule and differences between DNA and RNA.

3. Write briefly on:

3A. Immunodiffusion technique

3B. Essential fatty acids

3C. Isoelectric focusing

3D. PAGE

4. Write short notes on:

4A. Allosteric regulation of enzymes

4B. Structure of starch and glycogen

5. Write briefly on:

5A. Donnan-membrane equilibrium

5B. Polymerase chain reaction

6. Discuss the different methods for the detection and measurement of radioactivity. What are the applications of radio isotopes in biochemistry and medicine?

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MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2002

PAPER II: INTERMEDIARY METABOLISM

Tuesday, July 02, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer ANY FIVE Questions**
- **All questions carry equal Marks**
- **Write answers that are brief, clear, relevant and legible**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe cholesterol synthesis. Add a note on role of lipoproteins in atherosclerosis.

2. Write briefly on:

2A. Cori's cycle

2B. Galactosemia

3. "Glucose is important in RBC metabolism". Explain with appropriate examples.

4. Describe DNA replication. What are the experimental evidences which helped to elucidate the process of replication?

5. Describe metabolism of purines. Add a note on importance of ribonucleotide reductase.

6A. Discuss the amphibolic role of Kreb's cycle.

6B. Hartnup's disease.

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MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2002

PAPER III : CLINICAL BIOCHEMISTRY NUTRITION

Wednesday, July 03, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer ALL Questions**
- **All questions carry equal Marks**
- **Write answers that are brief, clear, relevant and legible**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Write briefly on :

1A. Importance of Van den Bergh's test

1B. Importance of urine analysis

1C. Synthetic nucleotides

1D. Formation and use of tetra hydro folate (FH_4)

2. Discuss the role of copper and iodine in the body.

3. How are carbohydrates digested and absorbed? Add a note on lactose intolerance.

4. Explain in detail the chemistry, RDA, sources, metabolism and deficiency manifestations of vitamin B_{12}.

5. Write short notes on:

5A. Antivitamins

5B. Mechanisms involved in detoxication

5C. Dietary fibre

5D. Essential fatty acids

6. Discuss the principles and practice of quality control in a clinical biochemistry laboratory.

MANIPAL ACADEMY OF HIGHER EDUCATION

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MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2002

PAPER I: CHEMICAL NATURE AND METHODS OF STUDY OF BIOCHEMICAL COMPOUNDS AND ENZYMES

Monday, December 02, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer ANY FIVE Questions.**
- **All questions carry equal Marks.**
- **Write answers that are brief, clear, relevant and legible.**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe **FOUR** important mechanisms by which enzymes are regulated with appropriate examples.

2. How are steroid hormones, phosphatidyl inositol and eicosanoids similar and different in?

2A. Locality of their effects

2B. Location in cell

2C. Structure

3. What is meant by domain? How do domains contribute to protein structure and function?

4. Describe the principle and application of ion-exchange chromatography.

5. Explain the role of reverse transcriptase and plasmids in genetic engineering.

6. How do proteoglycans differ from glycoproteins in structure and functions? How are blood group types determined?

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MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2002

PAPER II: INTERMEDIARY METABOLISM

Tuesday, December 03, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer ANY FIVE Questions.**
- **All questions carry equal Marks.**
- **Write answers that are brief, clear, relevant and legible.**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe the metabolism of branched chain amino acids.

2. Describe the key differences between liver, muscle and brain that account for different utilization of metabolic fuels.

3. Explain the metabolism of LDL and HDL.

4. Describe the regulation of gene expression.

5. Write short notes on:

5A. Mutation

5B. Covalent modification

6. Discuss the compartmentalization of metabolic pathways.

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MSc (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – DECEMBER 2002

PAPER III: CLINICAL BIOCHEMISTRY NUTRITION

Wednesday, December 04, 2002

Time available: 3 Hours **Maximum Marks: 100**

- **Answer any FIVE Questions.**
- **All questions carry equal Marks.**
- **Write answers that are brief, clear, relevant and legible.**
- **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe the chemistry, dietary sources, requirement, metabolism, biochemical role and deficiency symptoms of vitamin D.

2. Give an account of heme synthesis. Add a note on porphyrias.

3. Write briefly on:

3A. Mechanism of iron absorption.

3B. Biological value of a protein.

4. Give an account of:

4A. Obesity

4B. Dietary fibres

5A. Write an account of metabolic acidosis.

5B. Liver function tests.

6. Write briefly on:

6A. Apoptosis

6B. Antioxidants.