Reg. No.										

MANIPAL UNIVERSITY

M.Sc. MEDICAL (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2015

PAPER I: GENERAL BIOCHEMISTRY AND INSTRUMENTATION

Tuesday, July 14, 2015

Time: 14:00 – 17:00 Hrs. Maximum Marks: 100

✍ **Long Essay:**

1. Explain the principles and procedures of various blotting techniques. Emphasize on their applications.

(15 marks)

2. Discuss the different methods for the detection and measurement of radioactivity. What are the applications of radioisotopes in biochemistry and medicine?

(15 marks)

3. **Write briefly on:**

3A. Different levels of structural organisation of proteins with suitable examples

3B. Membrane transport systems and ion channels

3C. Cell structure and fractionation

3D. Different types of enzyme inhibition

3E. Process of oxidative phosphorylation and various uncouplers

3F. Radioimmuno assays (RIA)

3G. Classification of lipids with suitable examples

3H. Classification of carbohydrates along with suitable examples

3I. Structure and properties of amino acids

3J. Principles and procedures of determination of pH

(7 marks × 10 = 70 marks)

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MANIPAL UNIVERSITY

M.Sc. MEDICAL (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2015

PAPER II: METABOLISM AND NUTRITION

Wednesday, July 15, 2015

Time: 14:00 – 17:00 Hrs. Maximum Marks: 100

✍ **Answer ALL questions.**

✍ **Long answer questions:**

1. Describe the synthesis of glucose from alanine. Briefly mention the influence of hormones on this process.

(12+3 = 15 marks)

2. Explain the process of fatty acid synthesis and its regulation.

(15 marks)

3. **Short answer questions:**

3A. Give a broad outline of the methods of investigation of metabolic pathways.

3B. Write the steps of metabolism of glucuronic acid pathway and its importance.

3C. Describe nitric oxide metabolism with its role in health and disease.

3D. Give an account of digestion and absorption of dietary lipids.

3E. Write the salvage pathway of purine nucleotide synthesis, its importance and the associated genetic disorder.

3F. Describe the metabolic defect and clinical complications of galactosemia.

3G. Give a detailed account of Vitamin K metabolism, function and its antagonists.

3H. Explain role of folic acid in nucleotide synthesis and the use of folate antagonists in cancer chemotherapy.

3I. Iron is a one-way element - Explain. Add a note on disorders of iron metabolism.

3J. Discuss the factors affecting the energy requirement of an individual.

(7 marks × 10 = 70 marks)

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M.Sc. MEDICAL (FINAL) BIOCHEMISTRY DEGREE EXAMINATION – JULY 2015

PAPER III: MOLECULAR BIOLOGY, BIOTECHNOLOGY AND CLINICAL BIOCHEMISTRY

Thursday, July 16, 2015

Time: 14:00 – 17:00 Hrs. Maximum Marks: 100

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Describe the functions of liver. Explain liver function tests with their interpretations.

(8+7 = 15 marks)

2. Describe transcription in prokaryotes. Add a note on post transcriptional modifications. Explain action of any two inhibitors of transcription.

(8+4+3 = 15 marks)

3. **Short answer questions:**

3A. Acute phase proteins

3B. Mutations

3C. Enumerate the causes of metabolic acidosis. Explain biochemical findings in blood in metabolic acidosis

3D. Diagnostic significance of LDH

3E. Cathepsins

3F. Quality control

3G. Hemoglobinopathies

3H. Telomere and telomerase

3I. Oncogenes

3J. Synthesis of adrenal medullary hormones

(7 marks × 10 = 70 marks)