Reg. No.										

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – AUGUST 2012

SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Thursday, August 16, 2012

Time: 10:20 – 13:00 Hrs. Maximum Marks: 40

1. Describe protein structure and forces stabilizing native structure of protein.

(3 marks)

2. Explain glycolytic pathway and add a note on its energetics.

(3 marks)

3A. How triacyl glycerol is synthesized in adipose tissue?

3B. Explain lipolysis in adipocytes and its importance.

((2+1)+2 = 5 marks)

4. Write an assay on urea cycle and its importance.

(3 marks)

5. Write notes on:

5A. Glycogenolysis and its regulation.

5B. Plasma albumin.

5C. Digestion of dietary proteins.

5D. Chemiosmotic theory of oxidative phosphorylation.

5E. Fatty liver.

(2×5 = 10 marks)

6. Give biochemical basis for the following:

6A. Bile salts are essential for complete digestion and absorption of dietary fats.

6B. Brown adipose tissues have uncoupler of oxidative phosphorylation.

6C. Hypoglycemia in patients with Von Gierke's disease does not respond to administration of glucagon.

6D. Individuals with glucose 6 – phosphate dehydrogenase defieciency develop hemolytic anemia during treatment with drugs.

6E. Tricarboxylic acid cycle plays an amphibolic role.

(1×5 = 5 marks)

7. Write enzyme defect, metabolic intermediate accumulated/excreted and symptom of following inherited diseases

7A. Maple syrup urine disease.

7B. Alkaptonuria.

7C. Gaucher's disease.

7D. Hyperlipoproteinemia type II A.

7E. Amylopectinosis (Anderson's disease).

7F. Hereditary fructose intolerance.

(1×6 = 6 marks)

8. Write brief note on biochemical role of following compounds (give appropriate reactions as example)

8A. Creatine phosphate

8B. Glutathione

8C. UDP glucose

(1×3 = 3 marks)

9. How following biochemically important compounds are formed from their precursor metabolites? Give reactions with enzymes/co-factor/coenzyme

9A. 2,3 bisphosphoglycerate.

9B. Serotonin.

(1×2 = 2 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – AUGUST 2012

SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Friday, August 17, 2012

Time: 10:20 – 13:00 Hrs. Maximum Marks: 40

1. Describe protein synthesis in prokaryotes. Add a note on post translational modifications.

(3+1 = 4 marks)

2. Describe chemistry, sources, requirement, metabolism, functions and deficiency manifestations of vitamin A.

(4 marks)

3. Discuss calcium metabolism under the following aspects:

3A. RDA and sources

3B. Absorption

3C. Serum calcium homeostasis

(1+1+2 = 4 marks)

4. Explain the structure of DNA. Add a note on complementary nature of DNA strands, its implication to replication.

(2+1 = 3 marks)

5. Enumerate the steps in synthesis of heme. Add a note on its regulation.

(3 marks)

6. Explain the principle, procedure and applications of recombinant DNA technology.

(3 marks)

7. **Write short notes on:**

7A. Coenzyme functions of folic acid .

7B. Protein energy malnutrition.

7C. Restriction fragment length polymorphism.

7D. Polymerase chain reaction.

(2×4 = 8 marks)

8. Give reasons for the following:

8A. All point mutations need not produce a functionally defective protein.

8B. Pyridoxine symptoms overlap niacin deficiency symptoms.

8C. Puromycin arrests elongation step of protein synthesis.

8D. Patient with chronic metabolic acidosis excretes more ammonia in urine than normal subject.

8E. Decreased HCl secretion in stomach leads to hypochromic microcytic anemia.

(1×5 = 5 marks)

9. Write brief notes on:

9A. Lesch-Nyhan syndrome.

9B. Creatinine clearance.

9C. Complex carbohydrate in diabetic diet.

9D. Conjugation reactions in xenobiotics.

(1½×4 = 6 marks)