Reg. No.										

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – JUNE 2010

SUBJECT: BIOCHEMISTRY – PAPER I (ESSAY)

Monday, June 07, 2010

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

1. Describe the reactions of glycolysis. Add a note on its energetics.

(3+1 = 4 marks)

2. Describe the process of β-oxidation of fatty acids. Briefly explain how any defect in this pathway can result in hypoglycemia.

(2+1 = 3 marks)

3. Discuss the formation and biological importance of specialized products formed from the amino acids glycine and tyrosine.

(2+2 = 4 marks)

4. With suitable illustrations, explain the effect of substrate concentration on velocity of an enzyme catalyzed reaction.

(2 marks)

5. Outline the structural organization of electron transport chain. Explain the general mode of action of uncouplers.

(1½+½ = 2 marks)

6. Briefly discuss the formation and significance of following:

6A. Glycogen

6B. Urea

6C. β-Hydroxybutyrate

6D. Mevalonate

(1½×4 = 6 marks)

7. Give the biochemical basis for the following:

7A. Liver cirrhosis patients present with ascites and pedal edema.

7B. A patient on treatment for fever with antipyretics develops anemia.

7C. Optical activity of fresh solutions of glucose changes on standing.

7D. Milk fat to be used as the major source of dietary lipids for patient with cystic fibrosis.

7E. Chronic alcoholics tend to have high plasma levels of VLDL.

(1×5 = 5 marks)

8. Write brief notes on following:

8A. Reverse cholesterol transport.

8B. Diagnostic utility of plasma enzymes.

8C. Dietary glucose absorption.

8D. Oral glucose tolerance test.

(1½×4 = 6 marks)

9. Briefly discuss with the help of suitable examples clinical usefulness of serum electrophoresis in disease diagnosis.

(2 marks)

10. Give the major structural and functional features of the following:

10A. Ig M

10B. Fatty acid synthase complex

10C. Active site

(2×3 = 6 marks)

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MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – JUNE 2010

SUBJECT: BIOCHEMISTRY – PAPER II (ESSAY)

Tuesday, June 08, 2010

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

1. With help of suitable diagrams explain the major features of DNA replication process.

(3 marks)

2. Describe the structure and functions of different types of RNA's present in eukaryotes with suitable diagrams.

(3 marks)

3. Write the following aspects of purine metabolism:

3A. Pathways for synthesis of AMP and GMP from IMP.

3B. Pathway for degradation of purine nucleotides.

(1½+1½ = 3 marks)

4. Describe the formation, transport and disposal of bilirubin. Add a note on Van den Bergh test and its clinical significance.

(2+1 = 3 marks)

5. **Write brief but relevant notes on:**

5A. Recombinant DNA technology

5B. Lac-operon

5C. Active transport

5D. Detoxification reactions

(2×4 = 8 marks)

6. Explain the salient features of genetic code.

(2 marks)

7. Describe metabolic functions of thiamine, pyridoxine and biotin.

(1×3 = 3 marks)

8. Provide the metabolic relation between the following:

8A. Folic acid and B_{12}

8B. Niacin and tryptophan

8C. Calcium and phosphorus

8D. α-Tocopherol and selenium

(½×4 = 2 marks)

9. Write briefly the clinical significance of estimation of following biochemical parameters:

9A. Plasma urea and creatinine

9B. Serum alanine transaminase and alkaline phosphatase

9C. Serum alpha fetoprotein and carcinoembryonic antigen

9D. Serum pH and HCO_3^-

(1×4 = 4 marks)

10. Discuss briefly the nutritional significance of following:

10A. Dietary fibres

10B. Polyunsaturated fatty acids

10C. Trace minerals

(1×3 = 3 marks)

11. Give the biochemical basis for the following:

11A. Phenobarbitone can precipitate acute intermittent porphyria.

11B. A heat-stable DNA polymerase used in the polymerase chain reaction.

11C. Restlessness and disorientation is observed in patients with severe liver disease.

11D. Recurrent renal stone formation are seen in patients with primary hyperparathyroidism.

11E. Vit B_{12} is administered in pernicious anaemia patients through a nasal spray instead of oral or parental route.

11F. Increased bleeding and clotting time observed in patients on long term oral antibiotic treatment.

(1×6 = 6 marks)