Reg. No.										

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2008

SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Monday, June 02, 2008

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

1. Write the reactions by which lactate is converted to glucose. Describe the biochemical basis for lactic acidosis in any two clinical conditions.

(4+1 = 5 marks)

2. Enumerate the steps by which fatty acids are oxidized to yield energy. Write the role of cAMP in lipid metabolism.

(4+1 = 5 marks)

3. Define transamination reaction with an example. What is the application of serum transaminases in diagnostic enzymology?

(2 marks)

4. Write the reactions by which adrenaline is synthesized from tyrosine. What are the end products formed by adrenaline catabolism?

(2 marks)

5. Define primary structure of a protein. Describe the structure of insulin.

(2 marks)

6. Draw a normal serum electrophoretic pattern and label the different bands. Give any two examples of serum proteins involved in the transport of various compounds.

(2 marks)

7. Describe the structure of glutathione and its functions.

(2 marks)

8. Enumerate any four functions of phospholipids.

(2 marks)

9. Fatty liver is observed in patients with chronic alcoholism. Give the biochemical basis.

(2 marks)

10. Discuss the metabolic changes in carbohydrate and lipid metabolism in insulin deficient subjects.

(2 marks)

11. Write the sequence of electron carriers in the electron transport chain when the donor of electrons is succinate.

(2 marks)

12. Describe the formation of prostaglandins and function of any one of them.

(2 marks)

13. Krebs cycle is an anabolic pathway. Explain with examples.

(2 marks)

14. A patient has flatulence and diarrhea following the ingestion of milk. What is the most probable enzyme deficiency? Write the reaction catalysed by the deficient enzyme and the biochemical basis for the symptoms and management of the patient.

(2 marks)

15. Give reasons for the following:

15A. Administration of 2, 4 dinitrophenol causes an increase in body temperature.

15B. For the estimation of plasma glucose, blood is collected in fluoride containing tubes.

15C. Methotrexate is used as an anticancer drug.

15D. Benedict's test is not answered by sucrose, but on hydrolysis it answers the Benedict's test.

15E. Rancidity of foods rich in fat can be prevented by vitamin E.

15F. The fasting serum sample in a patient with type I hyperlipoproteinemia appears milky.

($1 \times 6 = 6$ marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2008

SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Tuesday, June 03, 2008

Time: 10:20–13:00 Hours | Maximum Marks: 40

1. Explain the catabolism of purine nucleotides. Add a note on the causes and consequences of hyperuricemia and gout.

(2+2 = 4 marks)

2A. Describe transcription.

2B. Give an outline of post transcriptional modifications of RNA.

(3+2 = 5 marks)

3A. Describe the steps involved in recombinant DNA preparation and cloning. What are the applications of DNA cloning?

3B. What is a DNA probe? How is it used?

3C. Explain *lac* operon model of gene regulation.

((2+1)+(1+1)+2 = 7 marks)

4. How bilirubin is formed, transported and excreted?

(3 marks)

5. Write an account on vitamin A emphasizing chemistry, source, function and deficiency symptoms.

(½+½+2+1 = 4 marks)

6. Enumerate the functions of following minerals

6A. Zinc

6B. Iron

6C. Copper

(1×3 = 3 marks)

7. Write short notes on:

7A. Structure and function of membranes

7B. Blood buffers

7C. Proteins in balanced diet

7D. Renal function tests

(2×4 = 8 marks)

8. Explain biochemical reasons for the following:

8A. Megaloblastic anemia is common feature of folic acid and vitamin B12 deficiency.

8B. In cholestatic liver disease, fat soluble vitamins are poorly absorbed.

8C. Dietary fibers do not provide energy, yet they are important constituent of a balanced diet.

8D. Dietary deficiency of tryptophan increases niacin requirement.

(1×4 = 4 marks)

9. How are the following substances detoxified?

9A. Benzoic acid

9B. Phenol

9C. Acetylsalicylate

9D. Ethanol

(½×4 = 2 marks)