MANIPAL UNIVERSITY

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Monday, June 01, 2009

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

1A. Write the pathways by which glycogen is formed and degraded in the liver. How these pathways are regulated?

1B. Discuss the importance of pentose phosphate pathway.

((3+2)+2 = 7 marks)

2. Name the different types of linkages seen in proteins. Briefly explain their role in maintaining protein structure.

(3 marks)

3. Describe the importance of estimation of serum isoenzymes in clinical diagnosis and prognosis with suitable examples.

(3 marks)

4. Explain briefly the metabolic functions of insulin.

(2 marks)

5. Describe the reactions of β-oxidation of fatty acids. Give the biochemical basis for the occurrence of ketoacidosis in uncontrolled diabetes mellitus.

(2+2 = 4 marks)

6. Discuss briefly the formation of following compounds

6A. Mevalonate.

6B. Acetyl CoA.

6C. Dopamine.

6D. S-adenosylmethionine.

(1×4 = 4 marks)

7. Write the reactions catalyzed by following enzymes. Indicate the significance

7A. Succinate thiokinase.

7B. Aldolase B.

7C. Transketolase.

7D. Isocitrate dehydrogenase.

(1×4 = 4 marks)

8. Write brief notes:

8A. Digestion and absorption of dietary triacylglycerol.

8B. Effect of substrate concentration on enzyme activity.

8C. Importance of electron transport chain.

8D. Special compounds formed from glycine.

(1½×4 = 6 marks)

9. Discuss the formation, fate and metabolic importance of HDL.

(3 marks)

10. Give the biochemical basis for the following:

10A. Chronic alcoholism causes fatty liver.

10B. Galctose and glucose are epimers, but galactose and mannose are not.

10C. In sickle cell anemia polymerization of Hb takes place under deoxygenated state.

10D. Net ATP yield in aerobic glycolysis is higher than anaerobic glycolysis.

(½×4 = 2 marks)

11. Briefly describe the formation of urea.

(2 marks)

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FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2009

SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Tuesday, June 02, 2009

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

1. Explain pyrimidine nucleotide synthesis pathway and its regulation.

(3+1 = 4 marks)

2. Describe with neat diagram steps in DNA replication.

(3 marks)

3. How hnRNA is transformed in to mRNA?

(2 marks)

4. Discuss the strategy employed in the gene therapy.

(2 marks)

5. Explain any two liver function tests and mention their diagnostic significance.

(2 marks)

6. Write biochemical reasons for the following:

6A. DNA with higher AT base composition have lower temperature of melting.

6B. Point mutation need not produce a defective protein.

6C. Bile salts and pigments are excreted in urine of patient with obstructive jaundice.

6D. Oxalates in diet inhibit absorption of iron and calcium.

6E. Non-digestible carbohydrates are important components of diet although they do not provide energy.

(1×5 = 5 marks)

7. Mention the enzyme defect and metabolites accumulated/ excreted in these diseases.

7A. Cirggler-Najjar syndrome.

7B. Variegate porphyria.

7C. Xeroderma pigmentosum.

7D. Severe combined immunodeficiency syndrome.

(1×4 = 4 marks)

8. Write short notes on:

8A. Genetic code.

8B. Proto-oncogenes.

8C. Western blotting.

8D. Folic acid.

(2×4 = 8 marks)

9. Explain the role of protein in the balanced diet.

(2 marks)

10. Give brief description of role of kidney in acid base balance.

(2 marks)

11. Give two examples of inhibitors of protein synthesis and their site of action.

(2 marks)

12A. Name any two protein synthesis inhibitor and their mode of action.

12B. Give brief outline of role of cytochrome P-450 in xenobiotic metabolism.

12C. Write the biochemical function of biotin with example.

12D. What are the symptoms of vitamin A deficiency.

(1×4 = 4 marks)