Reg. No.										

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2019

SUBJECT: BIOCHEMISTRY– PAPER I (ESSAY)

Thursday, June 06, 2019

Time: 10:20 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions.**

1A. Discuss the metabolism of glycogen and mention the functions of glycogen.

(6+1 = 7 marks)

1B. Describe the biochemical defect and characteristic features of Vengeirkes disease.

(3 marks)

2. A 19 year old girl was referred to a University Medical Centre because of easy fatigability and exercise tolerance. Careful neurologic examination revealed some muscle weakness in her extremities. Several muscle biopsies were performed. Microscopic examination indicated that the muscle was filled with vacuoles containing lipid. Chemical measurements indicated that these muscle specimens contained elevated amounts of TAG but only one – sixth as much carnitine as biopsy specimen obtained from other patients who did not have any primary muscle disease.

2A. Describe the function of carnitine

2B. Name the biochemical pathway affected

2C. Describe the various steps involved in the above mentioned pathway.

2D. How might the carnitine deficiency account for triacyl glycerol accumulation in the muscles

(2+1+5+2 = 10 marks)

3A. Define gluconeogenesis & mention its importance. Add a note on the Cori cycle.

3B. i) Name the pathway which produces NADPH

ii) Discuss the functions of NADPH in the RBC & WBC

iii) Write in brief note on G-6PD deficiency

3C. Write briefly on:

i) Atherosclerosis ii) Brown adipose tissue

3D. i) Write two functions of prostaglandins ii) Write briefly on fatty liver

3E. Write short notes on

i) Quarternary structure of proteins ii) Denaturation

3F. i) Name the end product of protein metabolism

ii) Outline the pathway of its synthesis

iii) Name a disorder associated

3G. A fair chubby 2 year old boy with blue eyes was brought to the hospital with the complaint that he has mental retardation. Often the urine had a mousy odour. The doctor suspected Phenylketonuria.

i) Name the test that should be performed on the urine which aids the diagnosis. What will be the finding?

ii) Name the enzyme deficiency that leads to PKU. Write the reaction catalysed by this enzyme.

iii) What is the probable reason for the mental retardation observed.

iv) What should be the mode of treatment

3H. Write short notes on the following

i) Transamination ii) Polyamines

3I. Describe the process of protein digestion in the GI tract.

3J. What is competitive inhibition. Discuss its clinical importance with a suitable example

3K. Write brief note on the following

i) Isoenzymes ii) High energy compounds

3L. Discuss the chemiosmotic hypothesis of oxidative phosphorylation.

3M. Describe the biosynthesis of the following

i) Thyroid hormone ii) Creatine

3N. Give one example of an enzyme for each of the following

i) Therapeutic application ii) Diagnostic use

iii) Industrial use iv) Genetic engineering

3O. Give reasons for the following

i) Increased susceptibility to skin cancer is observed in albinos

ii) Occurrence of cataract is common in patients suffering from diabetes mellitus.

iii) Oral administration of antibiotics is often advised for patients with kidney failure.

iv) Trans fatty acids are injurious to health

(4 marks × 15 = 60 marks)

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MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST MBBS DEGREE EXAMINATION – MAY/JUNE 2019

SUBJECT: BIOCHEMISTRY– PAPER II (ESSAY)

Friday, June 07, 2019

Time: 10:20 – 13:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions.**

1. Describe the process of transcription. Add a note on the post transcriptional modifications.

(7+3 = 10 marks)

2. A patient was brought to the OPD with complaints of nausea, indigestion and low grade fever. On examination it was found that sclera had yellowish discoloration. Lab investigation revealed that his total bilirubin was 8mg/dl, conjugated bilirubin was 4mg/dl, ALT was 400 IU/L and ALP was 150 IU/L.

2A. Comment on the report and give your probable diagnosis?

2B. Explain how heme is catabolised and excreted.

2C. Name two inherited unconjugated hyperbilirubinemias and the defect in each.

(2+6+2 = 10 marks)

3A. With a neat diagram, describe the structure of tRNA.

(4 marks)

3B. A 10 year old mentally retarded child who had a tendency of self – mutilation was brought to the hospital. On lab investigation his serum uric acid level was found to be 12mg/dl.

i) What is your probable diagnosis?

ii) What is the biochemical defect?

iii) Write the reaction catalysed by this enzyme.

iv) What is the significance of the pathway?

(1+1+1+1 = 4 marks)

3C. Write short notes on:

i) Enzymes required for replication.

ii) Restriction endonucleases

(2+2 = 4 marks)

3D. Name the different mechanisms of detoxification with one example for each.

(4 marks)

3E. Explain the technique of PCR. What is its application?

(3+1 = 4 marks)

3F. Name the active form of Vitamin D and explain its functions.

(4 marks)

3G. Write a note on biological value of proteins.

(4 marks)

3H. i) What are the phases of cell cycle? What is the significance of each?

(1+1 = 2 marks)

ii) Write a note on renal clearance.

(2 marks)

3I. What is metabolic acidosis? What are the biochemical changes occurring in metabolic acidosis? Name two pathological conditions causing metabolic acidosis.

(1+2+1 = 4 marks)

3J. Describe the deficiency manifestations of thiamin.

(4 marks)

3K. Name two sources of free radicals in the body. Give two reactions by which they are inactivated.

(4 marks)

3L. i) What is the function of vitamin K?

ii) Give the biochemical defect in the following:

a) Acrodermatitis enteropathica
b) Keshan disease
c) Wilson's disease
d) Simple goitre

(2+2 = 4 marks)

3M. Write a note on absorption, transport and storage of iron.

(4 marks)

3N. Discuss the importance of fiber in the diet.

(4 marks)

3O. Give reasons for the following:

i) Prolonged prothrombin time is observed in patients with long term antibiotic therapy.
ii) Hemoglobin is a better buffer than albumin.
iii) Phenobarbitone can precipitate acute intermittent porphyria.
iv) Replication in one strand of DNA is discontinuous.

(1+1+1+1 = 4 marks)