THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF PHARMACY
THE ACADEMIC YEAR 2023/2024 – SEMESTER II

BACHELOR OF PHARMACY HONOURS
FMU3300 – BIOCHEMISTRY – LEVEL 3
FINAL EXAMINATION
DURATION: THREE (03) HOURS

DATE: 24TH OCTOBER 2024 TIME: 9.30 A.M. – 12.30 P.M.

Part B- Short Answer Questions (20 marks)

1.

1.1 Give one (01) example each for disease conditions/clinical consequences resulting from the deficiencies in the following biomolecules.

I. Pyruvate dehydrogenase

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II. Glucose 6-phosphate dehydrogenase

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III. Vitamin B_3

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(03 marks)

1.2 Write the difference between coarse control and fine control in the regulation of metabolism.

(04 marks)

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1.3 List three (03) kinetic characteristics of allosteric enzymes. (03 marks)

I.....

.....

II.....

.....

III.....

.....

2.

2.1 What is meant by the term 'genetic code'? (02 marks)

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2.2 State three (03) characteristics of genetic code. (03 marks)

I.....

.....

II.....

.....

III.....

.....

2.3 List two (02) main structural features of the tRNA molecule. (02 marks)

I.....

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II.....

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2.4 Differentiate between point mutation and frame-shift mutation in genes. (03 marks)

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Part C – Structured Essay Questions (60 marks)

1.

1.1 State the difference between aerobic and anaerobic glycolysis. (02 marks)

1.2 List the main reactions of the glycolytic pathway. (08 marks)

1.3 Write a short note on each of the regulatory steps in the glycolytic pathway. (05 marks)

2.

2. 1. State three (03) factors affecting the rate of enzyme activity. (03 marks)

2.2. Write the Michelis-Menten equation on enzyme kinetics. (02 marks)

2.3. 'Allopurinol is a drug that acts by non-competitively and irreversibly inhibiting xanthine oxidase enzyme'. Briefly explain this statement using the hyperbolic plot of the Michaelis-Menten equation. (10 marks)

3.

3.1 State how dietary triglycerides are hydrolyzed in the gastrointestinal tract. (02 marks)

3.2 State the function of the carnitine shuttle. (03 marks)

3.3 State why HDL cholesterol is considered as good cholesterol whereas LDL cholesterol as bad cholesterol. (02 marks)

3.4 The structure of fatty acid derivative palmityl CoA is given below.

CH_3-(CH_2-CH_2)$_{12}$-CH_2-CH_2-CO-SCoA

Briefly explain the process of β-oxidation of above fatty acid derivative. (08 marks)

4.

4.1 State the three (03) types of amino acids according to their metabolism. (03 marks)

4.2 Briefly explain deamination and transamination reactions in amino acid degradation giving one (01) example for each.

(06 marks)

4.3 Briefly explain the processes of biosynthesis and degradation of haem. (06 marks)