UNIVERSITY OF FORT HARE

Physiological Biochemistry
BCH 321

SUPPLEMENTARY EXAMINATIONS

January

2019

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Time: 3Hours

Subject: BCH321

Marks: 100

This paper consists of 3 pages including the cover page

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INSTRUCTIONS

Answer All Questions

Question 1

1. Define the following:

   i. Blood plasma
   ii. Intrinsic System (blood)
   iii. Blood serum
   iv. Protease
   v. Deoxyhaemoglobin
   vi. Immunoglobulin
   vii. Vascular spasm
   viii. Ischemic stroke
   ix. Embolism
   x. Platelet aggregation (10)

2. In the blood clotting process, there are several steps which initiate the process and then there are those steps that amplify the process. Describe both processes in detail. 10)

3. Many heart attacks involve the formation of blood clots that clog (infarct) the arteries of the heart. These clots block the flow of blood to the heart muscle starving the heart tissue of oxygen. Failure to rapidly restore the flow of blood to the heart muscle results in permanent damage to the heart or even death. What can be done to dissolve the clots? (5)

[25]

Question 2

1. Name the protein responsible for the distribution of iron via the blood. (1)

2. Briefly discuss:
   i. Intestinal iron absorption (5)
   ii. Ferritin and its role in the prevention of iron overload. (4)

3. What is apotransferrin? (1)

4. Which three important hormones do the kidneys release and what are their functions? (3)

5. Briefly describe how the kidneys regulate the filtering of blood. (3)

6. Why do people suffer from kidney failure? (3)

7. Ammonia is a neurotoxin. How would a buildup of ammonia affect normal brain activity? (5)

[25]

Question 3

1. Describe the three skeletal muscle fibre types and name a characteristic of each. (6)

2. Discuss the four major steps in myosin thick filament and actin thin filament interaction. (8)

3. Muscle contraction must be tightly regulated. Name two proteins that are responsible for this regulation. (2)

4. Describe the different ways neurons can be anatomically characterized. (8)

5. Define the term "tonic or regular spiking". (1)

[25]

Question 4

1. Discuss the following:
   i. Myopia
   ii. Macular degeneration
   iii. Hyperopia (6)

2. Discuss the innate immune response focusing on dendritic cells, major histocompatibility complex and natural killer cells. (12)

3. Name and discuss the five major classes of immunoglobulins. (5)

4. Acquired immunity is based on two types of lymphocytes. Name the two types and where each one is developed. (2)

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