"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES
DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS

END OF SEMESTER FINAL EXAMINATIONS

NSLS103: CLINICAL PATHOLOGY

MAY 2021

LECTURER: MR G. MALUNGA

DURATION: 7 HOURS

DATE: 10 MAY 2021 0900 hrs

INSTRUCTIONS

1. Write your candidate number on your answer sheets.
2. Answer any **one** question of your choice.
3. Each full question carries 100 marks
4. Submit your answer script as a PDF through Moodle **ONLY**.
5. Use the following specifications in your answer script:
   Font: Times New Roman
   Font size: 12
   Line spacing: 2.0
6. Credit will be given for logical, systematic and neat presentations.

Answer any ONE question

1) Describe and explain the principles of all analytical methods used to measure the following biochemical analytes.

a) Serum creatinine [40 marks]

b) Serum bilirubin [40 marks]

c) Serum iron [20 marks]

2) **a)** Give a detailed analysis of how hormones are regulated. Illustrate your answer by named examples. [40]

b) Explain in detail how blood pH is maintained. [30]

c) Describe the biochemical features associated with hepatitis. [30]

3) A middle aged widow, living alone, was found semi-conscious by her son. He had last seen her a week before, when she had seemed well. On examination, she was extremely dehydrated but not ketotic. Respiration was normal. She was not a known diabetic. Blood samples were collected for laboratory investigations before and after treatment and the results are shown in Table 1 below. She was treated with fluids and insulin.

Table 1: Serum results for the widow

	Pre-treatment	**5 hr post-treatment**	**Ref Range**	**Units**
Na^+	148	160	135 – 145	mmol/l
K^+	5.6	4.3	3.5 - 5.5	mmol/l
Cl^-	118	130	97 – 107	mmol/l
HCO_3^-	15	23	22 – 26	mmol/l
Urea	30	12	1.7 - 6.7	mmol/l
Total protein	90	76	60 - 80	g/l
Osmolality	380	350	275 – 300	mOsmol/l kg
Glucose	54	12	3.9 - 5.6	mmol/l
Ketones	Negative	Negative		

a) What is the possible diagnosis? Support your answer. [20]

b) State and explain further tests that can be done to confirm this diagnosis [15]

c) Explain what might have caused the coma [15]

d) Why did the Na^+ and Cl^- rise after treatment? [15]

e) Comment on the total protein. [10]

f) Why is it important in this case to lower the extracellular osmolality slowly? [10]

g) Name the acid-base disturbance present in this patient and explain how It may have arisen. [15]

The End