

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

END OF SEMESTER FINAL EXAMINATIONS

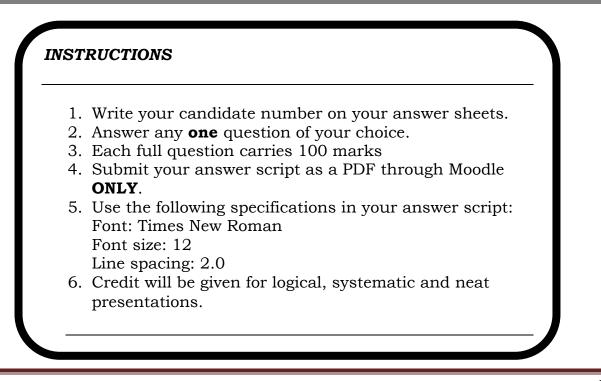
NSLS103: CLINICAL PATHOLOGY

MAY 2021

LECTURER: MR G. MALUNGA

DURATION:7 HOURS

DATE: 10 MAY 2021 0900 hrs



Answer any ONE question

- 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.

	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
C1 -	118	130	97 – 107	mmol/l
HCO ₃ -	15	23	22 – 26	mmol/1
Urea	30	12	1.7 - 6.7	mmol/l
Total protein	90	76	60 - 80	g/1
Osmolality	380	350	275 - 300	mOsmol/l kg
Glucose	54	12	3.9 - 5.6	mmol/l
Ketones	Negative	Negative		

Table 1: Serum re	sults for	the	widow
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- **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