NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF HEALTH SCIENCES

QUALIFICATION: BACHELOR OF MEDICAL LABORATORY SCIENCES	
QUALIFICATION CODE: 08BMLS	**LEVEL:** 6
COURSE CODE: CLC621S	**COURSE NAME:** CLINICAL CHEMISTRY 2B
SESSION: JANUARY 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR:	DR MARTIN GONZO

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. CALCULATOR

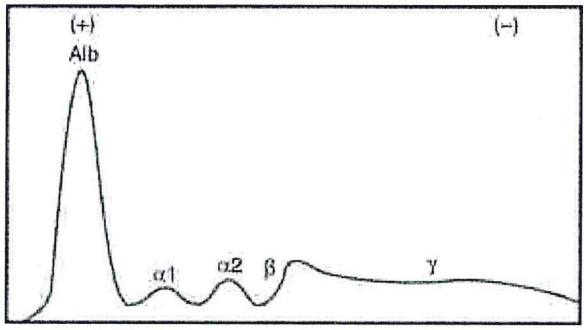
THIS QUESTION PAPER CONSISTS OF 6 PAGES (including this front page)

SECTION A [50]

QUESTION 1 [10]

Identify the condition(s) commonly associated with each of the following electrophoretograms. Give a brief explanation on the choice of condition. Only write the question number and corresponding answer.

1.1 (2)



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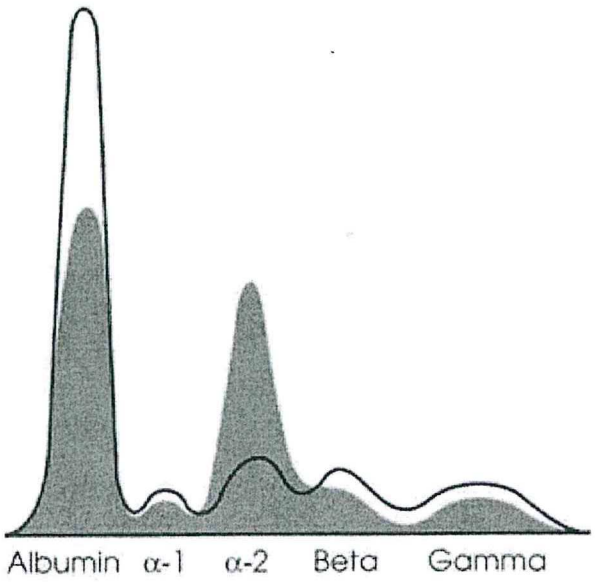

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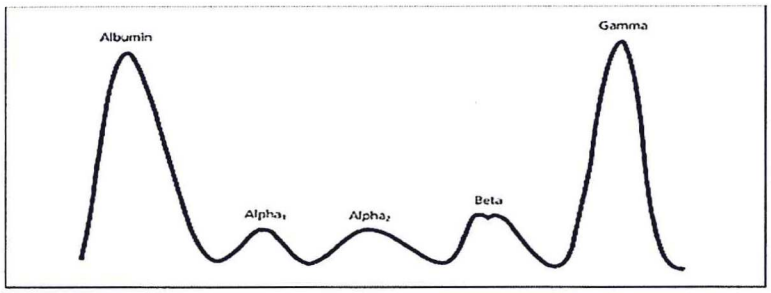

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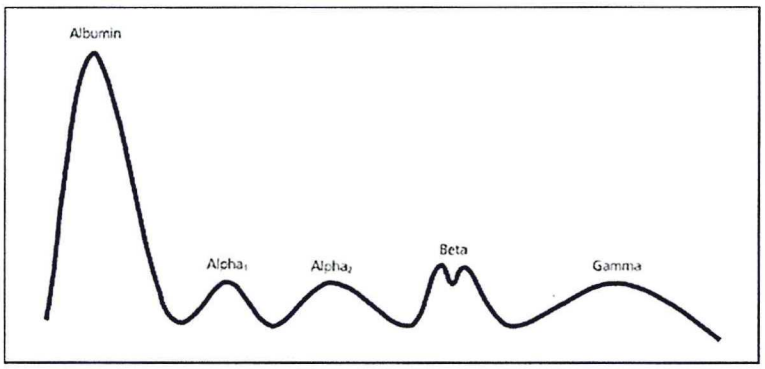

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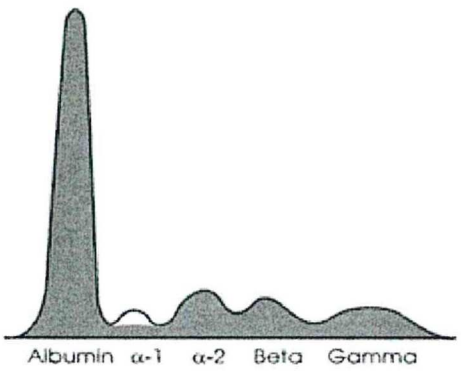

QUESTION 2 [30]

The following are laboratory results for an adult male patient from the clinical chemistry department. Review the results and answer the questions which follow.

ANALYTE	CONCENTRATION	REFERENCE RANGE
Serum/Plasma		
Sodium	141	136-146 mmol/L
Potassium	7.7	3.0-5.5 mmol/L
Chloride	107	90-110 mmol/L
CO_2	22	20-30 mmol/L
Urea	28.9	2.7-8.3 mmol/L
Creatinine	645	90-115 µmol/L
Glucose	19.8	3.5-5.5 mmol/L
Total protein	66	65-80 g/L
Albumin	28	35-50 g/L
Calcium	2.03	2.15-2.45 mmol/L
Osmolality	280	mOsm/kg
Serum Iron	11.2	11-17 µmol/L
Transferrin	3.5	2.0-3.6 g/L
Cholesterol	6.3	<5.2 mmol/L
Triglyceride (fasting)	3.53	<2.26 mmol/L
HDL	0.9	>1.2 mmol/L
24hr Urine		
Volume	1.3 L	0.8-2.0L
Creatinine	6	mmol/L

Enumerate the following (Show all working):

2.1 Anion gap (2)

2.2 Corrected calcium (2)

2.3 Albumin/globulin ratio (2)

2.4 Osmolal gap (2)

2.5 Creatinine clearance (3)

2.6 TIBC (2)

2.7 % transferrin saturation (2)

2.8 LDL (3)

2.9 Comment on the patient's renal status (2)

2.10 Briefly explain the causes of a low serum sodium (5)

2.11 Discuss the causes of a raised serum potassium (5)

QUESTION 3 [10]

3.1 Glucose oxidase method (2

3.2 Dye binding method for albumin (2)

3.3 Nephelometry (2)

3.4 Jaffe reaction for creatinine measurement (2)

3.5 Diacetly monoxime method for urea measurement (2)

SECTION B [50]

QUESTION 4 [20]

In relation to enzymes:

4.1 Briefly **explain** the factors which affect enzyme activity (10)

4.2 using **five relevant** examples illustrate how serum enzyme measurements are used in the diagnosis of disease. (10)

QUESTION 5 [10]

Give a detailed account of iron metabolism in the body. Indicate the major organs involved and the main processes in each organ in relation to iron. (10)

QUESTION 6 [10]

Explain how the body response to high calcium levels. Give the specific hormones involved and their effects on organs. (10)

QUESTION 7 [10]

Describe the body controls water balance during a process of water insufficiency. In your answer indicate how each action helps to correct low body water. (10)

END OF EXAMINATION