

NATIONAL UNIVERSITY OF LESOTHO
FACULTY OF HEALTH SCIENCES
BACHELOR OF PHARMACY (HONOURS)

PHA4304 - CLINICAL PHARMACY I
SUPPLEMENTARY EXAMINATION

AUGUST 2023

TOTAL MARKS: 100 MARKS

DURATION: 3 HOURS

This examination paper consists of two sections, Section A (50 marks) and Section B (50 marks).

INSTRUCTIONS

- Answer all questions.
 - Start each question on a new page.
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SECTION A

40 MARKS

Question 1 [8 marks]

For each of the tests mentioned below i) name the sample/specimen used [1], ii) name the analyte [1] and list any **two reasons** for a false negative result [2].

- a) Home pregnancy test [4 marks]
- b) Rapid antigen test for COVID-19 [4 marks]

Question 2 [10 marks]

Distinguish between the following:

- a) Hypovolemic vs dilutional hyponatraemia [2 marks]
- b) Hyperkalaemia vs pseudohyperkalaemia [2 marks]
- c) Compensated vs uncompensated respiratory acidosis [2 marks]
- d) Microalbuminuria vs macroalbuminuria [2 marks]
- e) Diabetes insipidus vs diabetes mellitus [2 marks]

Question 3 [12 marks]

The following drugs/disease condition cause serum potassium disturbances. For each drug/disease condition, name the associated potassium disturbance [1 mark] and discuss the mechanism by which this imbalance is induced [3 marks].

- a) Hydrochlorothiazide [4 marks]
- b) Rhabdomyolysis [4 marks]
- c) Diabetes Ketoacidosis (DKA) [4 marks]

Question 4 [10 marks]

Describe any one use of each of the biochemical/physical parameters below in monitoring therapy (where relevant name specific drug/condition to support your answer) [1 mark]; proceed to state the target therapeutic value/range of each parameter [1 mark].

- a) HbA_{1c} [2]
- b) INR [2]
- c) BMI [2]
- d) CD4⁺ count [2]
- e) aPTT [2]

Question 5 [10 marks]

Discuss the most appropriate clinical intervention for the management of hypokalaemia in the situations below. In each case assume the patient has been taking HCTZ 25 mg po od for more than 12 months [5,5 marks]

- a) Patient 1
15/08/ 2023: BP 155/90 mmHg, K⁺ 3.3 mmol/l
15/05/2023: BP 150/95 mmHg
15/02/2023: BP 155/85mmHg
- b) Patient 2
15/08/ 2023: BP 130/80 mmHg, K⁺ 3.2 mmol/l
15/05/202: BP 120/85 mmHg
15/02/2023: BP 130/85mmHg

SECTION B**50 MARKS****Question 6 [10 marks]**

Pt: Mr RR, 59-year-old male, with a history of asthma attack was admitted following adjustment of salbutamol dose (4 mg tds per day) to 1 tablet three time per day.

C/O: (complains); cramps, fatigue, weakness, flaccid paralysis

M/H: Asthma; current medication Salbutamol 4mg po bd

P/E: BP 130/82 mmHg, HR; ECG changes; ST depression, flattened T-waves, prolonged Pr interval, QRS widening, arrhythmia

Labs: RBG 5.6 mmol/l; Na⁺ 138 mmol/l, K⁺ 2.8 mmol/l, eGFR > 90 ml/min

Dx: ???

- a) What could be the provisional diagnosis [1 mark]? Provide the rationale for your answer [3 marks]
- b) Describe the mechanism underlying salbutamol-induced ADR above [2 marks]
- c) Provide a detailed treatment plan for Mr RR. Provide the rationale for your answer. [4 marks]

Question 7 [10 marks]

Pt: ST, a 72-year-old male, 70 kg male is admitted to hospital for further investigation of malaise, weight loss and chronic fatigue.

Plan: ST will be placed on IV fluid therapy for routine maintenance according to the following protocol:

IV Fluid Therapy for Routine Maintenance

30 mmol/kg/d water

1 mmol/kg/d sodium and chloride

0.5 mmol/kg/d potassium

≈ 50 - 100 g/d of glucose

- a) Calculate ST's daily water, electrolyte and glucose requirements. [4 marks]
- b) Develop a 24-hour fluid regimen for ST that meets the requirements in a) above. In your answer also identify which specific fluids are going to supply the required elements. [6 marks]

Question 8 [10 marks]

Pt: SM, 62-year-old male admitted with a history of muscle cramps, tingling in the fingers x 1/52 and confusion x 1/7.

M/H: known hypertension and CKD patient with a history of defaulting from therapy

P/E: BP 159/85 mmHg, swollen ankles and feet

Labs: Na⁺ 140 mmol/l, K⁺ 5.2 mmol/l, Ca²⁺ 1.8 [2.20 - 2.60 mmol/l (8.8 - 10.4 mg/dl)], eGFR (MDRD) 25 ml/min, albumin 2.6 g/dl (3.5 - 5.5) g/dl

- a) Calculate SM's corrected calcium concentration. [4 marks]

Adjustment formula:

Corrected [Ca²⁺] mmol/l = serum [Ca²⁺] mmol/l + 0.02(40 - [Pt's albumin] g/l)

- b) Discuss the pathophysiology of CKD-associated hypocalcaemia. [6 marks]

Question 9 [10 marks]

Pt: JC, 54-year-old male presenting with a complaint of jaundice (x 1/52)

M/H: PTB, started category I anti-TB treatment (RHZE) + pyridoxine 25 mg po od 3 weeks ago

P/E: nutritional status average, jaundice (++) , no abdominal distension.

Labs: ALT 125 U/l (3 - 58) U/l

- a) Provide an interpretation of JC's presenting signs and symptoms. **[4]**
- b) What changes, if any, should be made to JC's anti-TB treatment at this point? Explain. Also discuss whether additional interventions are necessary to treat JC's presenting signs and symptoms. **[6]**

Question 10 [10 marks]

Pt: RR, 48 year old female

M/H: diabetes mellitus on Tx

P/E: height 153 cm, weight 69.8 kg; BP 135/70 mmHg, HR 72 bpm

Pertinent Labs: FBG 7,4 mmol/l; BUN 22 mg/dl [8 - 18 mg/dl (2.8 - 6.4 mmol/l)], serum creatinine 120 µmol/l [50 - 110 µmol/l (0.6 - 1.2 mg/dl)]

- a) Provide a detailed analysis of RR's health status. [4 marks]
- b) On the basis of the analysis in a) above, develop a nutrition plan for RR. [6 marks]