



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH
SCIENCES
DEPARTMENT OF PHARMACY
FOURTH BPHARM PART II EXAMINATION – OCTOBER 2021
PH 4212 CLINICAL PHARMACY (SEQ)**

TIME: TWO HOURS

INSTRUCTIONS

- There are **four (04)** questions in Parts **A** and **B** of the SEQ paper.
- Answer all questions in the booklet provided.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

Part A

1. An 80-year-old woman presented to an out-patient clinic with a history of severe giddiness and a few episodes of blackouts. She was being treated for angina and hypertension. She was on below drugs for a few years.

Bendroflumethiazide	2.5 mg - once daily
Isosorbide mononitrate SR	60 mg - once daily

Her general practitioner had recently commenced, nifedipine SR 30 mg-twice daily for poorly controlled hypertension. On examination, her blood pressure was 90/60 mmHg.

- 1.1. As the clinical pharmacist in the out-patient clinic, identify the underlying problem in this patient and give reasons for those problems. Explain your suggestions to overcome those problems. **(45 marks)**
 - 1.2. Describe the pharmacokinetic changes that you can expect in this patient. **(30 marks)**
 - 1.3. Briefly explain the reasons for poor medication adherence in elderly **(25 marks)**
- 2.
- 2.1. Define the following terms. **(20 marks)**
 - 2.1.1. Volume of Distribution
 - 2.1.2. Clearance
 - 2.1.3. Half-Life
 - 2.1.4. Steady-State
 - 2.2. Briefly describe the different binding sites available in Albumin. **(30 marks)**
 - 2.3. Mention two reasons for altered affinity to the Albumin. **(20 marks)**
 - 2.4. Briefly describe below compartment modelling concepts **(30 marks)**
 - 2.4.1. Compartmental modelling
 - 2.4.2. Physiological modelling
 - 2.4.3. Non-compartmental modelling

Part B

3. Mr PR (65-years-old, body weight 68 kg) presented to the Accident and Emergency department of the hospital due to the feeling of increasingly unwell. On admission Mr PR was pale, lethargic and breathless.

He was on below medications for last two weeks due to a severe pain in the right metatarsal pharyngeal joint (due to gout).

Indomethacin 50 mg tds

Ranitidine 150 mg bd

His past medical history includes hypertension for 1 year and type 2 diabetes for 5 years. In addition to above medications Mr PR's routine medications are listed below;

Hydrochlorothiazide 25 mg once daily (for the last six months – increased from 12.5 mg)

Ramipril 5 mg once daily (started six months ago)

Gliclazide 40 mg bd.

Mr PR's laboratory results are as follows;

<u>Parameter</u>	<u>value</u>	<u>Reference values</u>
Na ⁺	137 mmol/L	(135–150 mmol/L)
K ⁺	6.9 mmol/L	(3.5–5.2 mmol/L)
Urea	28.5 mmol/L	(3.2–6.6 mmol/L)
Creatinine	268 micromol/L	(60–110 micromol/L)
Bicarbonate	18 mmol/L	(22–31 mmol/L)
Phosphate	1.7 mmol/L	(0.9–1.5 mmol/L)
Calcium	2.6 mmol/L	(2.2–2.5 mmol/L)
pH	7.26	(7.36–7.44)
Fasting blood glucose mmol/L	10.8	(<5.9 mmol/L)
24-hour urine output	600 mL	

- 3.1. Calculate Mr PR's renal function using Cockcroft–Gault equation.

(10 marks)

Cockcroft-Gault equation

$$eGFR = \frac{(140 - \text{age}) \times \text{weight} \times \text{constant}}{\text{serum creatinine}}$$

Constant = 1.23 for men and 1.04 for women

- 3.2.

3.2.1 What would be the medical condition developed in this patient? (10 marks)

3.2.2 Justify your answer based on patient's test results. (20 marks)

- 3.3. Describe the patient related factors and pharmaceutical factors which may have precipitated the condition you mentioned in 3.2.1. (50 marks)

3.4. Write two medication changes you would suggest for this patient to overcome the condition mentioned in 3.2.1. (10 marks)

4. Mrs DY (55 years old) was admitted to a medical ward with high fever, chills and rigors, and confusion for 3 days. Further, she had increased frequency of urination. On admission, her blood and urine samples were tested and the results are given below. IV Cefuroxime was started after admission.

Fasting blood glucose was tested on day 2.

Symptoms were not resolved after 3 days of antibiotics. Therefore, IV antibiotics were changed to penicillin and gentamycin.

Full blood count.	Value	Reference value
Total white cell count	$18 \times 10^9/L$	$4.5 - 11.0 \times 10^9/L$
Neutrophil	80%	40% - 75%
Lymphocyte	15%	10% - 40%
Eosinophil	3%	1% - 6%
Monocyte	2%	<10
Hb	12	12-17g/dL
Red blood cells	$4.5 \times 10^{12}/L$	$3.8 - 4.8 \times 10^{12}/L$
CRP	150	< 6
ESR	11mm in 1 st hour	10 mm
Urine full report	Value	
Pus cell	Field full	
RBC	nil	
Fasting blood sugar	180 mg/dL	< 110 mg/dL

4.3.

4.3.1. Comment on the above laboratory test results. (20 marks)

4.3.2. Write an important investigation that you would suggest for this patient before starting medications. (10 marks)

4.4. Mention the precautions you should take before starting penicillin and gentamycin (20 marks)

4.5. Patient was on following medications at the discharge.

Metformin 500 mg bd

Co-amoxiclav 625 mg bd 1 week

As the clinical pharmacist in-charge, explain how do you counsel the patient at the discharge? (50 marks)

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