



Faculty of Medicine, University of Ruhuna

Third Examination for Medical Degrees (Part II) July 2021

Pharmacology Paper I

Monday 19th July 2021

Answer all 05 questions

(9.00 a.m. - 11.30 a.m.) 2 ½ hours

Answer each question in a separate book

1.

1.1 Describe the following terms including their clinical significance with examples

1.1.1 First pass metabolism (25 marks)

1.1.2 Therapeutic index (25 marks)

1.2

1.2.1 Write **three (03)** indications for lithium therapy (10 marks)

1.2.2 Briefly describe how you would monitor a patient on lithium therapy (40 marks)

2.

2.1

2.1.1 List **two (02)** drugs in thionamide group (05 marks)

2.1.2 Describe the mode of action of the drugs in thionamide group (20 marks)

2.1.3 How would you balance the risks and benefits of thionamide before prescribing to a pregnant mother at her first trimester (25 marks)

2.2 A 43 year-old female patient was referred to the rheumatology clinic with pain and stiffness of small joints of hands. The clinical diagnosis of rheumatoid arthritis was confirmed with the investigations. Methotrexate was prescribed for the patient.

2.2.1 Outline the mode of action of methotrexate (15 marks)

2.2.2 Write **two (02)** drugs other than disease modifying anti rheumatic drugs, you would prescribe for this patient with justifications (10 marks)

2.2.3 How you would monitor this patient for adverse effects of methotrexate (25 marks)

3.

- 3.1 A 56 year-old man with type 2 diabetes mellitus and hypertension admitted with acute onset retrosternal tightening type chest pain for three hours. On examination he was in pain. Following observations were noted.

Pulse rate 104/min, SpO₂ 98% on room air, blood pressure 160/95 mmHg

Bilateral lung fields were clear on auscultation

ECG - ST Elevation myocardial infarction

- 3.1.1 Describe the initial pharmacological management of this patient (45 marks)

- 3.2 On the following day he complained of worsening shortness of breath with orthopnea for few hours. On examination, he was dyspnoeic with following observations.

Respiratory rate 30/min, SpO₂ 89% on room air, pulse rate 110/min

blood pressure 120/76 mmHg, jugular venous pressure normal

Auscultation of the chest revealed crackles in bilateral lung fields with gallop rhythm

- 3.2.1 What is the most possible cause for his deterioration? (15 marks)

- 3.2.2 Discuss the pharmacological management of the condition you stated in 3.2.1 (40 marks)

4. A 54 year-old man with type 2 diabetes mellitus and dyslipidaemia presented with burning pains on his feet. His examination revealed body mass index of 30 kg/m², acanthosis nigricans, absent joint position sensation on feet with stocking type of sensory loss. He had bilateral ankle oedema. His blood pressure was 150/90 mmHg and physical examination was otherwise unremarkable. He is on metformin 500 mg twice daily, pioglitazone 30 mg mane and atorvastatin 20 mg nocte. His investigations revealed the following.

FBS 211 mg/dL (normal range: < 110 mg/dL), HbA1C 8.9 % (normal range: < 5.6%)

Urine proteins ++, Pus cells 2-4 per high power field

Estimated glomerular filtration rate > 60 mL/min/1.73m²

- 4.1 List four (04) medical problems in this patient (10 marks)

- 4.2 Describe the mechanism of action of two oral hypoglycaemic agents this patient was prescribed (30 marks)

- 4.3 Mention three (03) adverse effects for each oral hypoglycaemic agent you described in 4.2 separately (20 marks)

- 4.4 Suggest four (04) alterations to his medications giving reasons (40 marks)

5.

5.1 A 35 year-old woman with asthma complains of cough and shortness of breath worsening at night and early morning. She has symptoms every day of the week. Auscultation of the chest revealed wheezes in both lungs.

5.1.1 Name **two (02)** classes of drugs you would start to relieve symptoms on her with an example to each class **(20 marks)**

5.1.2 Describe the mechanism of action of a drug class mentioned in 5.1.1 **(20 marks)**

5.1.3 Explain the pharmacodynamics of steroids, useful in the management of this patient **(15 marks)**

5.2 Two weeks later, she presented to Emergency Treatment Unit with acute worsening shortness of breath. She is unable to complete a single sentence due to breathing difficulty. On examination she is tachypnoeic and her oxygen saturation is 89% on room air.

5.2.1 Describe the management of acute condition of this patient **(30 marks)**

5.2.2 Write **three (03)** actions you would do with regard to her management during her first clinic visit after this admission **(15 marks)**