



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**

**DEPARTMENT OF PHARMACY**

**THIRD BPHARM PART I EXAMINATION – JANUARY 2026**

**PH3153 PHARMACOLOGY III – SEQ**

**TIME: THREE HOURS**

**INSTRUCTIONS**

- There are six questions in parts A, B and C of this SEQ paper.
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.
- Use illustrations where necessary.

**PART A**

1. A 22-year-old female with bronchial asthma experiences recurrent episodes of wheezing and shortness of breath.
  - 1.1. State four inhaled corticosteroids. (10 marks)
  - 1.2. Explain the mechanism of action of inhaled corticosteroids in asthma. (30 marks)
  - 1.3. State two advantages of inhaled corticosteroids over systemic corticosteroids. (10 marks)
  - 1.4. List two adverse effects associated with long-term inhaled corticosteroid therapy, and one preventable method. (10 marks)
  - 1.5. Briefly explain the mechanism of action of formoterol. (25 marks)
  - 1.6. Explain the reason for poor asthma control associated with excessive or frequent use of salmeterol. (15 marks)
  
2.
  - 2.1. Define crystalloid solutions. (10 marks)
  - 2.2. List two clinical uses of hypertonic crystalloids. (10 marks)
  - 2.3. Write four examples of commercially available crystalloid intravenous fluids. (10 marks)
  - 2.4. Differentiate between partial parenteral nutrition (PPN) and total parenteral nutrition (TPN). (20 marks)
  - 2.5. Briefly describe the composition of TPN. (25 marks)
  - 2.6. List four adverse effects of TPN. (10 marks)
  - 2.7. List three contraindications of TPN. (15 marks)
  
3.
  - 3.1. List the four types of estrogens used in clinical practice. (10 marks)
  - 3.2. Briefly describe the mechanism of action of estrogen. (25 marks)
  - 3.3. List three clinical uses of estrogen. (10 marks)
  - 3.4. List three adverse effects of estrogen. (10 marks)
  - 3.5. Describe the role of progesterone during the menstrual cycle and pregnancy. (25 marks)
  - 3.6. Name four synthetic progestins. (10 marks)
  - 3.7. List four clinical uses of progestogens. (10 marks)

4. A 45-year-old school-teacher presents to the outpatient clinic with a 2-month history of constipation. She reports passing hard stools and straining during defecation. She has been advised to increase dietary fibre, but her symptoms persist. She has hypertension and is on oral amlodipine once daily. She does not like to use "strong laxatives" because she is worried about dependency. The clinician prescribed methylcellulose.
- 4.1. Name three drugs that can cause constipation. (15 marks)
- 4.2. Name the pharmacological class of methylcellulose. (05 marks)
- 4.3. Briefly describe the mechanism of action of methylcellulose in the treatment of constipation. (25 marks)
- 4.4. List two advantages of methylcellulose over bisacodyl in this patient. (10 marks)
- 4.5. Write three patient education points that should be given when dispensing methylcellulose. (15 marks)
- 4.6. List three adverse effects of methylcellulose. (10 marks)
- 4.7. Briefly explain the effect of methylcellulose on the absorption of concomitantly administered oral drugs, with reference to the patient's antihypertensive medication. (20 marks)

#### PART B

5. A 52-year-old male patient with chronic kidney disease (CKD) stage 5 is on hemodialysis and has anemia of CKD with coexisting iron deficiency. The nephrologist decides to start on iron therapy along with erythropoietin therapy.
- 5.1. Name one oral iron preparation. (05 marks)
- 5.2. State two advice you would give him to improve the absorption of oral iron. (10 marks)
- 5.3. If the patient does not respond adequately to oral iron therapy, name one intravenous iron preparation that can be used in this patient. (05 marks)
- 5.4. Briefly describe the pharmacological basis of using erythropoietin in treating anemia of a patient with CKD. (20 marks)
- 5.5. List two common adverse effects of erythropoietin. (10 marks)
- 5.6. Name one important clinical parameter you would check before administering erythropoietin to a patient. (05 marks)
- 5.7. The above patient underwent a kidney transplant 6 months ago and is on immunosuppressive therapy. He presents with fever, dry cough, and shortness of breath and investigations confirm *Pneumocystis jirovecii pneumonia* (PJP). The clinician prescribed cotrimoxazole.
- 5.7.1. Name the two drugs that constitute cotrimoxazole and state the ratio in which they are combined. (10 marks)
- 5.7.2. Briefly describe the mechanism of action of each drug mentioned in 5.7.1. and explain the advantage of combination therapy over single-drug therapy. (25 marks)
- 5.7.3. List two important advice you would give to a patient starting cotrimoxazole. (10 marks)

**PART C**

6. A 55-year-old female patient with diabetes mellitus presented with fever, chills, dysuria and right loin pain for 3 days. Physical examination revealed right sided renal angle tenderness. Clinical diagnosis of acute right-sided pyelonephritis was made. It was decided to start gentamicin as empirical antibiotic therapy for this patient.
- 6.1. Write the mechanism of action of gentamicin. *(20 marks)*
- 6.2. Briefly describe the pharmacological basis of prescribing gentamicin in the treatment of acute pyelonephritis. *(20 marks)*
- 6.3. State the preferred route of administration of gentamicin for this patient. Give one reason for selecting this route of administration. *(10 marks)*
- 6.4. Briefly describe the following terms related to antibiotics.
- 6.4.1. Bactericidal *(10 marks)*
- 6.4.2. Concentration dependent killing *(20 marks)*
- 6.4.3. Post antibiotic effect. *(20 marks)*

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