

**NATIONAL UNIVERSITY OF LESOTHO
DEPARTMENT OF PHARMACY**

BACHELOR OF PHARMACY (HONOURS)

COURSE: PHA515 – CLINICAL PHARMACY II

MAY 2011

TIME: 3 HOURS

MARKS: 100

INSTRUCTIONS:

ANSWER ALL QUESTIONS

SECTION A: 50 MARKS

SECTION B: 50 MARKS

ANSWER EACH QUESTION ON A NEW PAGE

QUESTION 1 [10 marks]

RH is a 48 year old male who is admitted with a complaint of leg swelling associated with progressively worsening shortness of breath on exertion for two weeks. He was diagnosed with hypertension 6 months ago for which he was treated with HCTZ 12.5 mg od and atenolol 50 mg od. One month ago the dose of HCTZ was increased to 50 mg od.

The BP on current admission is 150/90 mmHg and has consistently remained above 140/90 mmHg over the past 6 months. On examination RH has pitting oedema of both lower and upper limbs; vital signs - HR 114 beats per minute; RR 30 breaths per minute. A provisional diagnosis of congestive cardiac failure is made.

- A. Explain the pathophysiology of RH's presenting signs and symptoms. [2 marks]
- B. What are the therapeutic goals in treating RH? [2 marks]
- C. How should treatment be initiated in RH? Provide the rationale for your answer. [2 marks]
- D. Depending on your answer to C above, how should RH's therapy be monitored? [2 marks]
- E. List two advantages and two disadvantages of rapid digitalization over slow digitalization in the management of CCF. [2 marks]

QUESTION 2 [10 marks]

MT is a 45 year old female who is admitted with a 3 day history of chest pain, dyspnoea and cough; she is also complaining of generalized weakness, tiredness and inability to walk since that morning. MT is a known diabetes mellitus patient on treatment with metformin 500 mg tds.

On physical examination, she looks dehydrated and is slightly disoriented. Vital signs on admission: body temperature 38 °C; BP 100/70 mmHg; HR 132 b/m; RR 28 breaths/minute. Laboratory findings on admission: random blood sugar 32.6 mmol/l; HbA_{1c} 6%. Provisional diagnosis: non-ketotic hyperglycaemic, hyperosmolar syndrome (NKHHS); pneumonia.

- A. What symptoms and signs demonstrated by MT are consistent with NKHHS? [2 marks]
- B. What is/are the likely precipitating factor/s of NKHHS in MT? [2 marks]
- C. Discuss the appropriate treatment of NKHHS in this patient. Provide the rationale behind your answer. [2 marks]
- D. What laboratory parameters should be monitored during MT's treatment? Explain. [2 marks]
- E. How should empiric antibiotic therapy for pneumonia be initiated in MT? [2 marks]

QUESTION 3 [10 marks]

MM, a 40 year old female, is admitted via the emergency department complaining of dyspnoea, chest pain and haemoptysis of 1 day's duration. She noted a progressive swelling, soreness and pain on the right calf for about two weeks and has been bed-ridden for most of that time. MM was diagnosed with deep vein thrombosis one month ago and after a 3 day hospitalization was discharged on treatment with warfarin 5 mg od.

Physical examination reveals an obese patient with an enlarged right leg and mild to moderate tenderness in the entire leg. Vital signs include BP 140/80 mmHg; HR 104 beats/minute and RR 28 breaths/minute. An INR of 1.4 is reported. A diagnosis of DVT and acute pulmonary oedema is made.

- A. Briefly describe the pathophysiology of MM's presenting signs and symptoms. [2 marks]

A decision is made to initiate MM on anticoagulant therapy with heparin.

- B. Describe in detail the appropriate heparin dosing regimen for MM. Provide the reasons for your answer. [2 marks]
- C. How should MM's heparin therapy be monitored? [2 marks]
- D. When should warfarin be administered, and how should the transition be accomplished? Explain your answer. [2 marks]

8 days later MM is discharged from the hospital and will be managed as an outpatient with warfarin 10 mg od.

- E. List any 4 key elements of patient education that MM should receive in order to ensure the safety and efficacy of warfarin therapy. [2 marks]

QUESTION 4 [10 marks]

LM is a 55 year old female who is admitted via the emergency department with a complaint of severe headache, dizziness and blurred vision since that morning. She is a hypertensive patient who was treated with HCTZ 25 mg od, captopril 25 mg tds and nifedipine 10 mg tds for more than one year. She decided to stop taking her medication about 3 months ago because she was feeling better.

Physical examination reveals a markedly obese patient but with no oedema; she is conscious but slightly confused. Her vital signs include a BP of 240/170 mmHg; HR 100 beats/minute; RR 30 breaths/minute and a normal body temperature.

- A. Based on the above information, what is the provisional diagnosis for LM? Explain. [2 marks]
- B. Discuss in detail the therapeutic objective in treating LM. [2 marks]
- C. How should treatment be initiated in LM? Provide the rationale for your answer. [2 marks]
- D. What further clinical assessment should be carried out in LM? [2 marks]

- E. List 4 key elements of patient education that LM should receive in order to prevent further recurrence of this episode. [2 marks]

QUESTION 5 [10 marks]

RL, a 28 year old male, is admitted with a 3 day history of headache, neck stiffness and confusion.

On physical examination he is febrile to touch, barely conscious, unable to speak but responds to painful stimuli. RL's RVD status is unknown. A provisional diagnosis of meningitis is made.

- A. What further tests are required to confirm/rule out meningitis in RL? [2 marks]
- B. How should treatment be initiated pending the results of the tests in A above? [2 marks]

The following morning, RL's condition has still not improved; laboratory results later in the afternoon confirm cryptococcal meningitis infection.

- C. Name and briefly describe the basic principles of two tests commonly used to diagnose cryptococcal meningitis. [2 marks]
- D. How should RL's acute cryptococcal meningitis be treated? [2 marks]
- E. Discuss in detail the pharmacological measures to be taken to prevent the recurrence of cryptococcal meningitis in RL after completion of the therapy described in D above. [2 marks]

SECTION B**50 MARKS**

QUESTION 6 [10 marks]

AM is a 38 year old female who is brought to the emergency department in a coma. According to the relatives she had complained of palpitations, sweating and confusion and had started demonstrating strange behavior since that morning (about 1 hour ago). She had fallen unconscious on the way to the hospital.

AM was recently diagnosed with diabetes mellitus type II (two weeks ago) and was started on metformin 850 mg and insulin (actraphane: 10 IU in the morning and 8 IU at bedtime). She had been responding well to therapy – she had mentioned less frequent episodes of excessive thirst and tiredness since starting treatment – and had decided to go for a run that morning as part of her goal of losing weight. However 10 minutes into the run she started experiencing the symptoms, returned home and was then rushed to hospital. The random blood glucose on admission is 2.0 mmol/l.

A. What is AM's diagnosis and how should she be treated? Explain in detail. **[5 marks]**

2 days later, AM has recovered sufficiently and is to be discharged from hospital. All of her medications are reinstituted and she is still encouraged to lose weight as she is overweight.

B. What effect, if any, will exercising have on her diabetic control and what precautions should she take in order to minimise the occurrence of future hypoglycaemic episodes? **[5 marks]**

QUESTION 7 [10 marks]

AR is a 75 year old male who is admitted to the hospital with a one week history of a gnawing epigastric pain which is associated with nausea and vomiting. AR has mild heart failure which is controlled with furosemide 40 mg od, captopril 12.5 mg tds and digoxin 0.125 mg od. He also has a 5 year history of severe rheumatoid arthritis which is moderately relieved with indomethacin 25 mg tds and prednisone 10 mg od.

On physical examination, all systems are normal and the patient is in no acute distress. A diagnosis of peptic ulcer disease is made.

A. Identify and discuss briefly all the factors that place AR at increased risk of developing peptic ulcers. **[5 marks]**

After assessment by the attending physician, a decision is made to treat AR as an outpatient.

- B. What treatment should be instituted for treating the ulcers and, given AR's medical history, what strategies can be used to prevent the recurrence (and complications) of peptic ulcers in the future? **[5 marks]**

QUESTION 8 [10 marks]

LQ, a 50 year old male, is admitted to the hospital complaining of blurry vision and loss of red-green colour vision for about 2 weeks. LQ has just completed 10 weeks of Category I anti-TB treatment; he has no medical history of congenital red-green colour blindness, hypertension or diabetes mellitus.

An ophthalmological examination revealed decreased visual acuity in both eyes; no evidence was seen of glaucoma, cataracts or retinal damage. Notable laboratory findings on admission: ALT 68 U/L, urea 16 mmol/l.

- A. Discuss the most likely causes of LQ's presenting signs and symptoms. **[5 marks]**
- B. How should CJ be treated? What changes, if any, should be made in his current TB regimen? Explain. **[5 marks]**

QUESTION 9 [10 marks]

MS is a 39 year old RVD+ male who presents with diarrhoea, low appetite, painful and difficult swallowing, weight loss and generalized weakness for at least one month. MS was started on anti-retroviral therapy about one year ago but stopped taking his ARVs after one month because of drug intolerance. He is currently not on any medication.

Physical examination reveals a severely ill-looking, wasted and dehydrated male in respiratory distress. Pertinent laboratory test results include Hb 2.3 g/dl and absolute CD4+ count 8 cells/mm³.

- A. Discuss the pathophysiology of MS's presenting signs and symptoms. **[5 marks]**
- B. What are the treatment objectives for MS? Outline in detail the approach to the treatment of this patient. **[5 marks]**

QUESTION 10 [10 marks]

MR is an 85 year old female who is admitted to the hospital in a coma. According to her daughter, she collapsed to the ground earlier that morning (about 30 minutes ago) and has been unconscious since then. MR has no history of diabetes mellitus, hypertension or any other cardiovascular diseases.

The BP on admission is 140/80 mmHg; other vital signs are normal. Laboratory results are all within normal limits.

- A. What diagnostic tests and evaluations will be helpful in guiding MR's therapy? What general treatment interventions should be made for MR? **[5 marks]**

7 days after admission, MR is clinically stable but still unconscious. She is discharged into palliative care with a recommendation to place her on total parenteral nutrition.

- B. What assessment should be made before starting TPN? List two complications of long-term TPN and discuss how they can be minimised. **[5 marks]**