1 a) A 45-year-old patient comes to you for a medical ‘checkup’. In preparation for the visit they managed to obtain laboratory results showing a normal full blood count, ESR, fasting blood sugar, urea and electrolyte levels. The patient is on no medication, has nil of note on history and the clinical examination is totally normal. Your clinical assistant gives you a message that a ‘dipstix’ examination of the urine is ‘positive for blood’

i) What is the single most important issue that you need to resolve at the onset of your investigations? (2)

ii) List your investigations - in a stepwise, logical sequence, indicating how they would assist you to resolve the central issue and how each test will thereafter assist you in doing only relevant investigations. (5)

iii) What would you say to your patient regarding your possible diagnoses and further management and to whom you might want to refer the patient. (2)

b) With exactly the same clinical scenario noted above, except that you have now received a different message, that there is “protein in the urine (with or without blood)” on dipstick examination

i) What are the three most important issues to resolve? (6)

ii) How would you resolve these issues by further investigation and indicate exactly how you would interpret the results. (8)

iii) What would you say to your patient regarding the diagnosis and further management. (2)

2 a) A 45-year-old female patient arrives at your casualty with the complaint of weakness in the left arm and leg. The weakness is more in the arm than in the leg and started about 2 hours ago while she was busy in her kitchen. Only medical history is that she is a known hypertension patient for the last 10 years on Enalapril and Amlodipine. She had a hysterectomy 5 years ago for stage 2 uterine cancer that was also treated with radiotherapy and chemotherapy. Her observations are the following: Pulse 92/min; BP: 168/96; Respiratory rate; 16/min; Temp: 36.6; NIHSS Score: 10; urine dipstix: +1 Protein; Rapid HIV: positive; HGT: 7.8; Weight: 83kg; Height: 1.72m

i) What is the differential diagnosis for this clinical picture? (5)

ii) List your investigations - in a stepwise, logical sequence, indicating how they would assist you to resolve the central issue and how each test will thereafter assist you in doing only relevant investigations. (5)
b) Let’s say that your patient had an ischaemic event
   i) What would be your management if you got a CT-scan available in your hospital? (8)
   ii) What would be your management if you are in Lephalale Hospital? (5)
   iii) What you would say to your patient regarding the diagnosis and further management. (2)

3 A 32-year-old female is brought into casualty after being found at home with an altered level of consciousness. According to the collateral, she is known to be HIV positive and was started on fixed dose combination ART 12 weeks ago. She was last seen 5 days ago and at that stage was completely well
   a) Please tabulate your differential diagnosis. (9)
   b) What would your stepwise cost effective diagnostic work-up entail. (4)
   c) List the contra-indications to lumbar puncture. (4)
   d) Tabulate the different CSF results for common CNS conditions in HIV. (8)

4 A 47-year-old teacher presented with a 6-week history of arthralgia involving her wrists, MCP and PIP joints bilaterally. Her sister has previously been diagnosed with psoriasis responsive to topical steroids. The teacher is on treatment with a thiazide diuretic for essential hypertension. On examination she has bilateral tenderness and swelling of her joints with no evidence of any cutaneous condition
   a) Discuss your differential diagnosis and give reasons for including the condition you mention in the differential diagnosis. (4)
   b) What special investigations would you request and why? (8)
   c) What are the potential side-effects of methotrexate therapy? (5)
   d) What are significant side-effects of chronic oral corticosteroid therapy? (8)
1. There are more than three totally distinct reasons why a diabetic patient might be acidotic. The mechanisms may or may not coexist.
   a) List the three most important reasons, and explain in detail how each situation might have arisen. (5)
   b) How would you make the diagnosis and how would you judge the severity of the condition in each of the three instances you mentioned? (8)
   c) How would you manage the cause of the acidosis? (8)
   d) In one of the types of acidosis mentioned above, you might need to correct the acidosis by a strategy involving the administration to a totally normoglycaemic diabetic patient, a continuous infusion of glucose. Explain the rationale for this course of action. (2)
   e) When could the administration of bicarbonate to an acidic diabetic patient be justified by a rational argument? (2)

2. a) A 52-year-old man comes to your clinic with recurrent axillary carbuncles. He also complains of an unintentional loss of weight from 110 to 102 kg in the last 2 months with new onset of fatigue and occasional blurred vision. A random blood glucose is 10 mmol/L taken at 11:00 am, he had eaten breakfast at 06:30
   i) You suspect this patient has type 2 diabetes mellitus, how could you make this diagnosis? (5)
   ii) You confirm that the patient is diabetic and start him on treatment and book an appointment with a diabetic educator. Six months later at a follow up visit you note that his Blood Pressure (BP) is 152/94mmHg. Looking back you see that his BP was 142/92 at his last visit one month ago. What further action is needed? (5)

   b) Six months later the patient goes on holiday for a month and stops all of his management. On return he is brought in by his wife who complains that her husband is drowsy, confused is breathing deeply and is incontinent for urine and has started slurring his speech
   i) What would you be concerned about? (5)
   ii) What investigations could you perform to investigate your concerns? (10)
3 A 38-year-old domestic worker, known to be HIV-positive (latest CD4 cell count 52 cells/ul) presented with a 3 week history of non-productive cough, night sweats and weight loss. On physical examination, she had a temperature of 38.6°C, pulse rate of 100 beats/min with normal heart sounds and no murmur, respiratory rate of 20 breaths/minute, bilateral crackles and normal percussion dullness. Pulse oximetry showed HbO₂ saturation of 92%.

a) What is your differential diagnosis?

b) What special investigations would you request?

c) What are the possible radiographic features of HIV-associated pulmonary tuberculosis?

d) What are the potential side-effects of isoniazid therapy

e) What are the common side-effects of cotrimoxazole

4 A 56-year-old patient presents to you with a 3 day history of worsening of his dyspnoea, tight chest with wheezing and a productive cough. No fever or chest pain. He was diagnosed with chronic obstructive pulmonary disease (COPD) 8 years ago and has been using 2 different types of inhalers on a regular basis. He admits to regular visits to the emergency centre (EC) with tight chests in the last few years. He has a 30 pack year smoking history. No use of illicit drugs. He is HIV negative and completed 6 months of TB treatment 20 years ago. He worked as clerk for 30 years.

a) How would you confirm the diagnosis of COPD in this patient clinically?

b) What 2 special investigations would confirm the diagnosis of COPD and explain what you would look for on these investigations.

c) How would you differentiate Asthma from COPD clinically, and on special investigations?

d) Apart from asthma, what other conditions should be considered in this patient? Differential diagnosis for COPD.

e) Discuss the cornerstones in the non-pharmacological management of COPD.