



"Investing in Africa's Future"

**COLLEGE OF HEALTH, AGRICULTURE AND NATURAL
SCIENCES**

DEPARTMENT OF HEALTH SCIENCES

NSLS104: CLINICAL PATHOLOGY PRACTICAL

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2018

LECTURER: MR G. MALUNGA

DURATION: 3 HOURS

INSTRUCTIONS

Answer **all** questions on the separate answer sheet provided.

The mark allocation for each question is indicated at the end of the question

Credit will be given for logical, systematic and neat presentations



Question 1

You are required to carry out a microscopy examination and biochemical analysis of a urine sample labeled **W** from a 70-year old man complaining of painful urination and oliguria.

Procedure

1. Pour the provided urine into a conical centrifuge tube to about two thirds full.
2. Record the appearance of the urine.
3. Dip a urine reagent strip into the urine and record the biochemical findings .
4. Centrifuge the urine in a centrifuge at 2500 rpm for 5 minutes.
5. Decant the supernatant completely.
6. Resuspend the sediment by tapping the bottom of the tube and transfer one drop of the sediment onto a slide and cover with a cover slip.
7. Examine the wet preparation using a microscope starting with the 10 x objective and then move on to the 40 x objective.
8. Record your findings using the 40 X objective lens.

Questions

- (a) Record the appearance of the urine. [1]
(b) Record the following biochemical findings of the urine. [20]

Leucocytes
Nitrite
Urobilinogen
Protein
pH
Blood
Specific Gravity
Ketones
Bilirubin
Glucose

- (c). Record the following microscopy findings of the urine. [25]

WBC
RBC
Epithelial cells
Yeasts
Casts
Crystals
S. haematobium



(d). What diagnosis can you make from your results? Support the diagnosis with your results and the given symptoms. [4]

TOTAL: 50 MARKS

Question 2

1. You are provided with 2 urine samples labelled **T1** and **T2** from two patients whose blood glucose results were abnormally high. You are required to determine the glucose concentration in these two urine samples.
2. You are also provided with 3 glucose standards which you are going to use for the approximation of glucose concentration in your urine samples. The standards have the following glucose concentrations.

| Glucose Standard | Glucose Concentration (g/dl) |
|------------------|---------------------------------|
| S1 | 0 |
| S2 | 1.5 |
| S3 | 3.0 |

3. Take 5 boiling test tubes and label them S1 to S3 and then T1 and T2.
4. Pour 2.5ml of Benedict's reagent into each of the 5 test tubes.
5. Add 0.5ml of glucose standard 1 to test tube labelled S1 and mix thoroughly.
6. Repeat step 4 above for the rest of the standards.
7. Add 0.5ml of urine T1 to the test tube labelled T1 and 0.5ml of urine T2 to the test tube labelled T2. Mix the test tubes thoroughly.
8. Place all the 5 test tubes in boiling water for exactly 5 minutes.
9. Remove the test tubes from the boiling water and examine the solutions in each tube for precipitate and colour change. Use the colours in the 3 standards and their given concentrations to report the glucose concentration in the urine samples.
10. Dip a urine dipstick in each urine sample and record your glucose results.



Questions

- a) (i) Record the approximate glucose concentrations of the urine samples and the urine dipstick glucose results in a suitable table of results. [25]

(ii) Express the glucose concentrations of the urine samples in mmol/l [4]
- b) Explain the principle of the Benedict method of glucose determination? [5]
- c) Deduce the diagnosis of the two patients from the urine results you obtained and the given information about the patients. Justify your deduction. [7]
- d) Which other tests can be done to confirm your diagnosis? [2]
- e) Do you think that if spectrophotometry was used, better results could have been produced in this practical? Explain your answer. [5]
- f) Name two methods which can be used to measure serum glucose? [2]

TOTAL: 50 MARKS

