

*"Investing in Africa's Future"*

**COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES  
DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES**

**NSLS207: PARASITOLOGY, MYCOLOGY AND VIROLOGY PRACTICAL**

**END OF SEMESTER EXAMINATIONS**

**LECTURER: DR S. MUTAMBU**

**APRIL 2026**

**DURATION: 3 HOURS**

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**INSTRUCTIONS**

Write your candidate number on your answer sheets and prepared slides.

Answer **all** questions.

Marks for each question are indicated in brackets at the end of the question.

Credit will be given for logical, systematic and neat presentations

**Answer any ALL questions****Question 1 (40 marks)**

**Ruth** aged 4 years attends a pre-school in her neighborhood. Yesterday her mother took **Ruth** to the local clinic for a medical checkup because she had a fever and flu-like illness, including shaking chills, headache, muscle pain, tiredness and was vomiting. **Ruth's** mother told the clinic nurse that she and **Ruth** were in the rural area for the past two weeks visiting her grandmother. **Ruth** was requested to provide a sample of blood in a tube labelled **A** which was then sent to the Laboratory for examination.

- a.** Using the blood sample in tube **A**, perform procedure **B** shown below and submit the slides for assessment. **(15 marks)**

***PROCEDURE B***

1. Add nine (9) parts of water to one (1) part of Giemsa stock solution to prepare a 10% working solution
2. Prepare thin and thick blood smears using the blood sample in tube A.
3. Allow the slides to dry completely in air by placing the slides on a flat surface.
4. Fix the thin smear with methanol for approximately 2 seconds and allow to dry in air.
5. Place the thin and thick slide on the staining rack.
6. Flood both the thin and thick smears on the slides on the staining rack with 1 in 10 diluted Giemsa stain and allow to stand for 10 - 15 minutes.
7. Gently wash the Giemsa stain with a stream of buffered water or tap water
8. Tilt the slides to remove excess water.
9. Wipe the underneath of the slides and allow them to air dry.
10. Examine the smears on the stained blood slides on the microscope under oil immersion.
  - i. Name the parasite and the stage of its life cycle shown on the slides. **(2 marks)**
  - ii. Discuss the methods used to control the parasite on the slides. **(18 marks)**
  - iii. Explain the principle of procedure **B**. **(5 marks)**

**Question 2 (20 marks)**

A 45-year-old male, who works at a forestry depot responsible for timber curing comes to the health center complaining of persistent coughing, he was tested of TB before and it was negative. He is asked to provide a sample. The sample was cultured on PDA and a growth of velvety, gray-green to dark green, colony was obtained. You have been provided with the culture plate.

**a.** Perform the necessary diagnostic procedures using the procedure below for the identification of the pathogen in the sample and record your results.

**Lactophenol Cotton Blue Procedure (LPBC)**

1. Place a small drop of LPCB stain in the center of a clean, labeled glass slide.
2. Using a sterile inoculating needle or loop, remove a small fragment of the fungal colony from the periphery.
3. Place the fragment into the drop of LPCB stain.
4. Use two needles to gently tease the sample apart to ensure a thin, even preparation.
5. Gently place a coverslip over the specimen, avoiding the formation of air bubbles.
6. Use blotting paper to remove excess stain from the edges of the coverslip.
7. For long-term preservation, seal the edges of the cover slip with clear nail polish.
8. Observe the slide under a microscope, initially with low power (10x) and then high power (40x).
  - i. In this genus, which is the most common and important pathogen?
  - ii. Which specimen type is mostly used?
  - iii. How can you further identify it?

**Question 3 (40 marks)**

On the workbenches, you are provided with slides, pictures and petri dishes with different organisms numbered **D to K**

- a. Identify each organism and stage of its life cycle shown on slides **D, E, F** and **G** under the microscope. (8 marks)
- b. What disease does each organism in slides **D, E, F** and **G** cause? (4 marks)
- c. How is disease **G** spread? (4 marks)
- d. What can one do to control the spread of disease **G**? (4 marks)
- e. Draw and label any three parts of the organism that you have identified on slide **D**. (4 marks)
- f. Identify the organism and stage of its life cycle shown in pictures **H** and **I**. (4 marks)
- g. What disease does each organism in pictures **H** and **I** cause? (4 marks)
- h. Identify the organism and stage of its life cycle shown in petri dishes **J** and **K**. (4 marks)
- i. How does one get infected by the organism in petri dishes **J** and **K**? (4 marks)

**END**