

Candidate Number:.....



"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

DEPARTMENT OF HEALTH SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS

SLS 404 MICROBIOLOGY II

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2018

LECTURER: Ms M T Magwenzi

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
 2. Answer **all** questions in sections A on the question paper.
 3. Answer **all** questions in section B in the spaces provided on the question paper.
 4. Answer any **2** questions in section C on separate answer sheets provided
 5. The mark allocation for each question is indicated at the end of the question
 6. Credit will be given for logical, systematic and neat presentations in sections B and C
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Section A: Multiple choice questions.

Answer all questions. This section will contribute 25% to the total mark of the paper. Put a circle around your answer choice as either true (T) or false (F). If you decide to change your answer put an X across your first choice and circle your new choice.

1. Factors that influence disease transmission include the
 - a. T / F ability of the pathogen to survive in the environment
 - b. T / F genetic make-up of certain populations
 - c. T / F geographical location
 - d. T / F nutritional status of a susceptible host
2. Sites or parts of the body where normal flora may be found include:
 - a. T / F the stomach
 - b. T / F alveoli of the lungs
 - c. T / F meninges of the brain
 - d. T / F nostrils
3. Infants are typically first exposed to disease
 - a. T / F in utero
 - b. T / F during the birth process
 - c. T / F when feeding after birth
 - d. T / F 8–12 hours after birth
4. The best treatment for HIV infection is
 - a. T / F a protease inhibitor
 - b. T / F a reverse transcriptase inhibitor
 - c. T / F an integrase inhibitor
 - d. T / F highly active antiretroviral therapy
5. Naturally acquired active immunity would be most likely acquired through
 - a. T / F Vaccination
 - b. T / F Drinking colostrum
 - c. T / F Natural birth
 - d. T / F Infection with disease followed by recovery
6. Quality control considerations when performing antibiotic susceptibility testing involve:
 - a. T / F Appropriate media preparation
 - b. T / F Storage of antibiotic discs at room temperature
 - c. T / F Testing control strains
 - d. T / F Use of updated reference break points

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7. The latent stage of syphilis, which may last for years, can occur between _____
- T / F** the secondary and tertiary stages.
 - T / F** the primary and secondary stages.
 - T / F** initial infection and the primary stage.
 - T / F** any of the three stages.
8. Factors that increase the risk of TB infection in the laboratory include:
- T / F** Leaky specimen container
 - T / F** Careless manipulation of sputum
 - T / F** Poor ventilation
 - T / F** Bacterial load of the sputum
9. The leading cause(s) of preventable blindness in the world is caused by:
- T / F** *Chlamydia trachomatis*
 - T / F** *Haemophilus influenzae*
 - T / F** *Neisseria gonorrhoeae*
 - T / F** *Staphylococcus aureus*
10. The growth of pathogens on the skin is limited by the following factors:
- T / F** Moisture
 - T / F** Shedding of skin scales
 - T / F** Salt content
 - T / F** Indigenous flora
11. The following are the characteristics of impetigo:
- T / F** Common in children
 - T / F** Can be caused by *Staphylococcus aureus*
 - T / F** Can be caused by *Streptococcus pyogenes*
 - T / F** Is highly contagious
12. The main advantage of passive immunization over active immunization is that:
- T / F** It can be administered orally
 - T / F** It provides antibody more rapidly
 - T / F** It contains primarily IgM
 - T / F** Antibody persists for a longer period
13. Common signs and symptoms of meningeal infection include:
- T / F** Headache increased by lying down
 - T / F** Fever
 - T / F** Frequent fainting
 - T / F** Neck stiffness

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14. In cholera disease, mortality is usually due to
- a. T / F Too many intestinal receptors for *Vibrio cholerae*
 - b. T / F Dehydration and loss of nutrients
 - c. T / F Too little water in the food stream
 - d. T / F The toxin produced by the bacterium
15. The principle causes of urethral discharge in men are
- a. T / F Herpes simplex virus type II
 - b. T / F *Trichomonas vaginalis*
 - c. T / F *Chlamydia trachomatis* types A-K
 - d. T / F *Neisseria gonorrhoeae*
16. In order to determine the aetiological agent of sepsis the following should be done
- a. T / F Collect blood in a ratio 1:10 to the blood culture media
 - b. T / F Collect blood samples 2-3 times over a 24 hour period at different sites.
 - c. T / F Careful disinfection of skin at site where blood is taken.
 - d. T / F Collect blood samples when patient's temperature spikes
17. The following features may be part of a congenital infection syndrome
- a. T / F Jaundice
 - b. T / F Cardiac malformation
 - c. T / F Conjunctival inflammation
 - d. T / F Mental retardation
18. Fatalities following influenza infection are usually due to
- a. T / F dehydration
 - b. T / F bacterial superinfection
 - c. T / F damage to the heart muscle
 - d. T / F formation of granulomas in the lung
19. Entry of microbial pathogens into the urinary tract
- a. T / F Is most often via the bloodstream
 - b. T / F Is often from the urethral meatus
 - c. T / F In females is assisted by sexual intercourse
 - d. T / F Is more common in males
20. Pharyngitis is
- a. T / F an inflammation of the inner ear
 - b. T / F an infection of the lower respiratory tract
 - c. T / F the production of a membrane over the throat
 - d. T / F an inflammation of the throat

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21. Caseation necrosis is a common feature of

- a. **T / F** H1N1 influenza
- b. **T / F** Pneumococcal pneumonia
- c. **T / F** Tuberculosis
- d. **T / F** Common cold

22. Food poisoning

- a. **T / F** is caused by bacteria or toxins present at the time of consumption
- b. **T / F** should be diagnosed by culture of vomitus
- c. **T / F** maybe caused by *Staphylococcus aureus*
- d. **T / F** can result in symptoms as late as 48hrs after ingestion

23. The following statements regarding genital tract infections are true

- a. **T / F** Not all genital tract infections are sexually transmitted
- b. **T / F** Contraceptive use can increase the risk of infection
- c. **T / F** Some contraceptive methods can reduce the risk of infection
- d. **T / F** Advanced (older) age of first sexual encounter leads to increased risk of infection

24. The following agents typically cause infection commencing during the neonatal period

- a. **T / F** Group B streptococci
- b. **T / F** *Staphylococcus aureus*
- c. **T / F** Rubella virus
- d. **T / F** Herpes simplex virus

25. Vaccines exist for each of the following infectious agents

- a. **T / F** *Haemophilus influenzae* type b.
- b. **T / F** *Streptococcus pneumoniae*.
- c. **T / F** *Listeria monocytogenes*.
- d. **T / F** *Neisseria meningitidis* serotype C

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Section B: Short responses.

Answer all questions in the spaces provided. This section contributes 25% of the total mark of this paper.

1. Name the five stages involved in disease progression and briefly explain what is happening at each stage. (10 marks)

Stage 1 _____

Stage 2 _____

Stage 3 _____

Stage 4 _____

Stage 5 _____

2. Name two yeasts that are common causes of opportunistic infections. (2marks)

(i) _____ (ii) _____

3. Explain why the lower respiratory tract is essentially sterile (3 marks)

4. _____ refers to infection of the bladder, while infection of the kidneys is referred to as _____. (2 marks)

5. Name the major fungal pathogen of the urogenital tract (1 mark)

6. Name the only common infection of the reproductive tract caused by a protozoan. (1 mark) _____

Name the protozoan (1 mark) _____

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7. The most common causes of bacterial meningitis are (3 marks)

- (i) _____ (ii) _____
(iii) _____

8. Can gentamicin be used to treat a serious common cold? (1 mark) _____

Explain your answer (1 mark): _____

Section C: Essays.

Answer any **two** essay questions from this section on the provided answer scripts. You may draw diagrams to assist in your explanations.

1. Describe the immune defences of the gastrointestinal tract and explain how pathogens like *Vibrio cholerae* and *Salmonella Typhi* escape the defences. (25 marks)
2. Give a detailed account of syphilis pathogenesis highlighting the signs and symptoms associated with progression of the disease. (25 marks)
3. Distinguish three intra-uterine and perinatal infections. Describe three examples of each. (25 marks)
4. Discuss some skin infections using examples of Gram positive bacteria and fungi. (25 marks)