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THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF PATHOLOGY & MICROBIOLOGY

UNIVERSITY OF ZAMBIA END OF YEAR DEFERRED & SUPPLEMENTARY EXAMINATIONS
PTM 4310 II

MEDICAL MICROBIOLOGY

MONDAY, SEPTEMBER 26, 2016

TIME: THREE HOURS

INSTRUCTIONS FOR THE WHOLE PAPER

1. This paper contains two (2) parts; Part A for Parasitology & party B for Bacteriology, Virology and Mycology; both parts combine to constitute 100 marks.
2. You must answer QUESTIONS from both Parts A and B.
3. Each answer in each part must be answered in a DISCREET BOOKLET. PLEASE DO NOT WRITE MORE THAN ONE ANSWER IN ONE BOOKLET; DOING SO WILL COST YOU MARKS!!!!
4. Read the instructions in each part and answer the questions as instructed.

CELLPHONES AND PROGRAMMED IMPLEMENTS ARE NOT ALLOWED IN THE EXAMINATION ROOM

CHIKENGA ERIC

INSTRUCTIONS FOR SPECIFIC PARTS

Part A: Parasitology: You must aim to make 30 MARKS FROM THIS SECTION

- page 1
- a. There are FOUR (4) short answer questions in this section; each with 10 marks
b. Choose any THREE (3) out of the four questions
c. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET
- Done
- 1.0 Domestic flies are well known as a nuisance and an important mechanical vector of various pathogens:
- a) 1.1 List three (3) parasitic diseases that can be transmitted by domestic flies. [3 marks]
b) 1.2 Briefly describe a community control program you would recommend for effective domestic fly control [7 marks]
- Done
- 2.0 Write short notes on the following
- a) 2.1 Post kala-azar dermatitis [5 marks] \$
b) 2.2 Loeffler syndrome [5 marks] \$
- Done
- 3.0 Describe the life cycle of *filariae*, the causative agent of Lymphatic Filariasis (*Bancroftian* Filariasis) [10 marks] \$
- Done
- 4.0 Malaria is caused by Plasmodium species, some of which can cause relapse and recrudesces:
- a) 4.1 Distinguish relapse from recrudesces [5 marks] \$
b) 4.2 What are the signs and symptoms of malaria seen in children [5 marks] \$

Part B: Virology: You must aim to make 20 MARKS FROM THIS SECTION

- a. There are THREE (3) short answer questions in this section; each with 10 marks
b. Choose any TWO (2) out of the three questions
c. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET
- Done
- 5.0 Briefly describe two (2) cytopathic effects that viruses cause on cells and tissues. Using an example, name one (1) cytopathic effect which is also an evasion mechanism that viruses use against humoral immunity [10 marks]
- Done
- 6.0 Unlike most other virus families, the Herpesviruses can cause LYTIC, PERSISTENT, LATENT and TRANSFORMING infections, explain LYTIC and LATENT infection [10 marks]

- (5.0) (i) Inclusion Bodies
- recognized after staining and fixation
- single or multiple bodies
- e.g. Poxviruses, Paramyxoviruses.
- (ii) Syncytia formation (Cell fusion)
- fusion of cells which is a mechanism of spread and immune evasion
- e.g. Paramyxoviruses.

cytopathic effects

chickenpox

inclusion cell

CHRISTINA
ERNE

7.0 Write short notes to explain how each of the following viral characteristics are used to classify viruses:

- * 7.1 Morphology [5marks] + Release of viruses (clarify)
- 7.2 Type of genome [5 marks]

Part C: Bacteriology & Mycology - You must aim to make 50 MARKS FROM THIS SECTION

- a. All questions are short answer questions carrying 10 marks each.
- b. You must answer:
 - i. ONE (1) Mycology question
 - ii. FOUR (4) Bacteriology questions
- c. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET

Mycology (questions 8.0 to 9.0)

- 8.0 Cryptococcosis, Candidiasis and Aspergillosis are fungal infections associated with immunosuppression. For each of these three infections:
 - 8.1 What are etiological agents of these infections [3 marks]
 - 8.2 List two (2) common immunosuppressive conditions associated with [2 marks]
 - 8.3 List three (3) area/organs of the body often affected by these infections [3 marks]
 - 8.4 How are the agents of these infections diagnosed [2 marks]
- 9.0 Grouping of medically important fungi is based on the types of tissues they parasitize and the diseases they produce.
 - 9.1 List the four (4) groupings of medically important fungi [4 marks]
 - 9.2 Which one of the above groupings houses the most virulent fungi? [2 marks]
 - 9.3 List four (4) genera of fungi belonging to this virulent group [4 marks]

Bacteriology (Questions 10.0 to 14.0)

- 10.0 Despite improvements in antibiotic therapy, disseminated infection manifesting as sepsis, remains the leading cause of death among critically ill patients.
 - 10.1 What are the TWO (2) main sources of infection in Sepsis? List two (2) bacteria as examples in each case [4 marks]
 - 10.2 What THREE (3) important things necessitates sepsis [6 marks]

→ Presence of bacteria in other body parts
 → Disseminated Bacteria² produce then act with ROS
 → ↑ pop of Adimicrobia Resist for + immunocompromised

11.0 ✓ Done Suffering sepsis may culminate in multi organ dysfunction; describe the specific damage sepsis may cause to the following organs

- 11.1 Lungs [2 marks] - Define
- 11.2 Kidneys [2 marks] - Things that accelerate Sepsis
- 11.3 Liver [2 marks]
- 11.4 Gastrointestinal tract [2 marks]
- 11.5 Clotting system [2 marks]

- 11.6 Endocrine system
- 11.7 Heart
- 11.8 Brain
- 11.9 Vasculature

12.0 ✓ Deep pain and tenderness below the diaphragm are typical of onset of *Bacteroides fragilis* infection. Describe the factors that make the management and treatment of *Bacteroides fragilis* infections such as peritonitis difficult. [10 marks]

13.0 ✓ Done Infectious Diarrheas arising from Food Poisoning are usually of THREE (3) types:

- 13.1 List these 3 types of Food Poisoning Diarrheas, and in each case, give an example of ONE (1) bacterium implicated in that diarrhea. [6 marks]
- 13.2 What are the TWO (2) criteria used to define food-borne outbreak [4 marks]

14.0 ✓ Done The Clostridia are a genus united by a number of common characteristics including their universal requirement for anaerobic conditions for growth.

- 14.1 List the FOUR (4) medically important species of Clostridia [4 marks]
- 14.2 For each of the species you listed, name an important infection associated with the species [4 marks]
- 14.3 Other than the anaerobic requirement, list TWO (2) other common characteristics shared by the Clostridia [2 marks]

- Bacilli
- gram +ve
- spore forming

END OF EXAM

MS

baleni

CHISENJA ERIC



THE UNIVERSITY OF ZAMBIA SCHOOL OF MEDICINE
DEPARTMENT OF PATHOLOGY & MICROBIOLOGY
2015/16 END OF YEAR EXAMINATIONS
PTM 4310 Medical Microbiology
PAPER II

TUESDAY 19 JULY, 2016 TIME:

THREE HOURS

Candidate's Computer Number:

INSTRUCTIONS TO CANDIDATES

INSTRUCTIONS FOR THE WHOLE PAPER

1. This paper contains three (3) parts; Part A for Parasitology, Party B for Virology & Party C for Bacteriology, and Mycology; all three parts combine to constitute 100 marks.
2. You must answer QUESTIONS from both all Parts
3. Each answer in each part must be answered in a DISCREET BOOKLET. PLEASE DO NOT WRITE MORE THAN ONE ANSWER IN ONE BOOKLET; DOING SO WILL COST YOU MARKS!!!!
4. Read the instructions in each part and answer the questions as instructed.

CELLPHONES AND PROGRAMMED IMPLEMENTS ARE NOT ALLOWED IN THE EXAMINATION ROOM

Part A: Parasitology: You must aim to make 30 MARKS FROM THIS SECTION

- a. There are FOUR (4) short answer questions in this section; each with 10 marks
b. Choose any THREE (3) out of the four questions
c. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET

- 1.0 The Cestode *Taenia solium*, either causes Taeniasis or Cysticercosis. Very briefly explain the difference between the two. [10 marks]
- 2.0 Very briefly explain how the snails can be biologically controlled for the prevention of Bilharzia. [10 marks]
- 3.0 Describe the life cycle of *filariae*, the causative agent of Lymphatic Filariasis (*Bancroftian* Filariasis) [10 marks]
- 4.0 Describe the core control methods of Malaria preventive measures [10 marks]

Part B: Virology: You must aim to make 20 MARKS FROM THIS SECTION

- a. There are THREE (3) short answer questions in this section; each with 10 marks
b. Choose any TWO (2) out of the three questions
c. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET

- 5.0 Briefly describe two (2) cytopathic effects that viruses cause on cells and tissues. Using an example, name one (1) cytopathic effect which is also an evasion mechanism that viruses use against humoral immunity [10 marks]
- 6.0 i) Briefly describe four (4) mechanisms that viruses use to enter the central nervous system (CNS) [5 marks]
ii) What are the main immunohistochemical features of HIV encephalitis in untreated individuals [5 marks]
- 7.0 i) Describe the three (3) features of oral polio vaccine that makes this vaccine ideal for global eradication of polio [5 marks]
ii) What are the biological features of polioviruses that make these viruses good candidates for elimination [5 marks]

Part C: Bacteriology & Mycology - You must aim to make 50 MARKS FROM THIS SECTION

- a. This part is constituted of Bacteriology & Mycology
 - b. All questions are short answer questions carrying 10 marks each.
 - c. You must answer FIVE (5) questions in total from this part:
 - i. ONE (1) Mycology question
 - ii. FOUR (4) Bacteriology questions
 - d. EACH QUESTION MUST BE ANSWERED IN ITS OWN BOOKLET
-

Mycology (questions 8.0 to 9.0)

8.0 Fungi grow either as yeasts or moulds, with mould forms exhibiting the greatest diversity. Some species of fungi can grow in either a yeast or a mould phase, depending on environmental conditions.

8.1 What are these species of fungi known as? [3 marks] *mycoses*

8.2 Describe the phenomenon you just wrote in 8.1 above [7 marks] *bimorphous*

9.0 Grouping of medically important fungi is based on the types of tissues they parasitize and the diseases they produce.

- a) 9.1 List the four (4) groupings of medically important fungi [4 marks]
- b) 9.2 Which one of the above groupings houses the most virulent fungi? [2 marks]
- c) 9.3 List four (4) genera of fungi belonging to this virulent group [4 marks]

Bacteriology (Questions 10.0 to 14.0)

10.0 The Clostridia are a genus united by a number of common characteristics including their universal requirement for anaerobic conditions for growth.

- a) 10.1 List the FOUR (4) medically important species of Clostridia [4 marks]
- b) 10.2 For each of the species you listed, name an important infection associated with the species [4 marks]
- c) 10.3 Other than the anaerobic requirement, list TWO (2) other common characteristics shared by the Clostridia [2 marks]

11.0 Staphylococci are known to possess an array of toxins and secreted enzymes, all detrimental to the human host. These organisms are also highly associated with wound infections. Clearly describe the formation of an abscess as a result of endogenous staphylococcal infection [10 marks]

✓ 12.0 Deep pain and tenderness below the diaphragm are typical of onset of *Bacteroides fragilis* infection. Describe the factors that make the management and treatment of *Bacteroides fragilis* infections such as peritonitis difficult. [10 marks]

Page | 3

✓ 13.0 The genus *Neisseria* contains the two Gram-negative cocci which are established human pathogens. These species; *Neisseria meningitidis* (meningococcus) and *Neisseria gonorrhoea* (gonococcus) are major cause of meningitis and gonorrhoea respectively.

a) 13.1 List three (3) routes by which these microorganisms enter the human host to cause meningitis (DO NOT INCLUDE THE TROJAN HORSE ROUTE) [3 marks]

b) 13.2 Clearly describe the classification of Meningitis cases [7 marks]

✓ 14.0 Despite improvements in antibiotic therapy, disseminated infection manifesting as sepsis, remains the leading cause of death among critically ill patients.

14.1 List ten (10) conditions that may combine to contribute to clinical syndromes associated with disseminated infection commonly classified as sepsis [10 marks]

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

END OF EXAM

Bacteremia - Endogenous infection
- Group A strep,
Staph