



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

JANUARY – APRIL 2020 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMMUNITY HEALTH AND DEVELOPMENT

REGULAR PROGRAMME

CHD 125: MEDICAL MICROBIOLOGY AND PARASITOLOGY

Date: April 2020

Duration: 3 Hours

INSTRUCTIONS: Answer ALL Questions in Part I and II, and any TWO in Part III

PART I: MULTIPLE CHOICE QUESTIONS

(20 Marks)

- Q1. Bacteria Stain as Gram-Positive or Gram Negative Because of differences in the
- Nucleus
 - Cell wall
 - Cytoplasm
 - Cell membrane
- Q2. Louis Pasteur:
- developed antiseptic surgery techniques
 - developed the postulates that explained how to prove the "germ" theory of disease for most infectious agents
 - was able to eliminate contamination of wine in France by a process now called pasteurization
 - disproved the theory of spontaneous generation by developing solid media upon which he grew organisms in a pure culture
- Q3. The Term that Refers to the Presence of Flagella at Both Poles is:
- Monotrichous
 - Peritrichous
 - Lophotrichous
 - Amphitrichous

- Q4. An organism of the genus *Staphylococcus* will be _____, while an organism of the genus *Spirochaeta* will be _____
- Spherical / Rod Shaped
 - Rod Shaped / Coiled
 - Spherical / Coiled
 - Coiled / Spherical
- Q5. The causative agent of streptococcal pharyngitis, also known as “strep throat,” is
- Streptococcus mutans*
 - Streptococcus lactis*
 - Streptococcus pyogenes*
 - Streptococcus pneumonia*
- Q6. Another name for pertussis is
- Yellow fever
 - Whooping cough
 - Shingles
 - The kissing disease
- Q7. Which microbial pathogen can grow under refrigerated conditions?
- Salmonella enterica*
 - Campylobacter jejuni*
 - Escherichia coli*
 - Listeria monocytogenes*
- Q8. Which of the following signs and symptoms is not linked to *Haemophilus influenzae*?
- Otitis media
 - Pneumonia
 - Malaria
 - Epiglottitis
- Q9. Jane is a lively 5-year-old who is seen in the clinic with a newly developed rash and a fever of 38 °C. The doctor learnt from the mother that Jane just came back after spending a week with her grandmother who had an episode of shingles. From the history, it is most probable that Jane’s rash is
- Measles
 - Small pox
 - Chickenpox
 - Rubella

- Q10. A patient suffered from tightness and severe pain in his jaw. He was admitted to the hospital and developed severe facial spasms. His history indicated that he had stepped on a nail at his family's farm a few days ago. The wound appeared to be minor and he had not sought professional treatment prior to admission to the hospital. The microorganism causing infection in this case is most likely
- Clostridium botulinum*
 - Clostridium difficile*
 - Clostridium tetani*
 - Clostridium perfringens*
- Q11. A 20-year-old female presents to the emergency room of a large city hospital complaining of extreme abdominal pain and vaginal bleeding. Upon examination, no lesions are noted in her vaginal tract and the urinalysis does not indicate any signs of a urinary tract infection. Her admitting diagnosis is pelvic inflammatory diseases. The most likely cause is
- Trichomonas vaginalis*
 - Chlamydia trachomatis*
 - Escherichia coli*
 - Herpes virus*
- Q12. An outbreak of vomiting, abdominal cramps and diarrhea without fever hat occurs in a group of students who have eaten together 2 hours before is most likely cause by
- Salmonella typhi*
 - Escherichia coli*
 - Shigella*
 - Staphylococcus eneterotoxin poisoning*
- Q13. Many strains of *Escherichia coli* are non-pathogenic. Nevertheless, this bacterium is associated with the following medical conditions in humans:
- Influenza, pneumonia and other lung infections
 - Skin infections such as dermatitis and eczema
 - Gastroenteritis, septicemia and urinary tract infections
 - Athlete's foot
- Q14. Herpes simplex 1 usually causes _____, and herpes simplex 2 usually causes ____
- cold sores/ genital herpes
 - canker sores/ fever blisters
 - fever blisters/ cold sores
 - shingles/ stomatitis

- Q15. Influenza virus _____ binds _____ on the surface of respiratory epithelial cells to facilitate its entry into the cell.
- Hemagglutinin/ glutamic acid
 - Hemagglutinin/ sialic acid
 - Neuraminidase/ glutamic acid
 - Neuraminidase/ sialic acid
- Q16. The form of Tuberculosis in which patients are actively shedding *Mycobacterium tuberculosis* and therefore are most infectious:
- Secondary or active
 - Primary
 - Military
 - Latent or dormant
- Q17. What virus crosses the placenta and causes congenital birth defects?
- Measles
 - Rubella
 - Varicella
 - Cytomegalovirus
 - Herpes simplex
- Q18. What is not a characteristic of retroviruses?
- Reverse transcriptase
 - Oncogenic
 - Leukemia virus
 - Integrase is an important viral enzyme
 - DNA virus
- Q19. Chagas is a disease caused by the protozoan *Trypanosoma cruzi*. Humans contract the disease through the bite of the triatomine bug. The following occur in Chagas disease except?
- Calabar swelling
 - Lymphadenopathy
 - Meningoencephalitis
 - Periorbital odema (Romana's sign).
- Q20. Each of the following statements concerning *Trichomonas vaginalis* is correct except?
- It is transmitted sexually
 - It causes bloody diarrhea
 - Can be diagnosed by visualizing the trophozoite
 - Can be treated by metronidazole.

PART II: SHORT ANSWER QUESTIONS

(20 Marks)

- Q1. Outline the steps involved in gram staining **(4 Marks)**
- Q2. Draw a well-labeled HIV diagram **(3 Marks)**
- Q3. Outline the Koch's postulates **(2 Marks)**
- Q4. List six vaccines that are used in immunizations in Kenya **(5 Marks)**
- Q5. Draw a well labeled structure of a HIV virus **(2 Marks)**
- Q6. Indicate the mode of action of the following antibiotics: **(4 Marks)**
- a) Penicillin
 - b) Tetracycline
 - c) Sulphonamides
 - d) Quinolones

PART III: LONG ANSWER QUESTIONS

(40 Marks)

- Q1. Discuss the following in reference to salmonella food infection:
- a) Characteristics of the causative organisms **(4 Marks)**
 - b) Distribution and food sources of organisms **(4 Marks)**
 - c) Incubation period and symptoms of attack **(8 Marks)**
 - d) Control of the infection **(4 Marks)**
- Q2. Discuss the following in reference to malaria:
- a) What is the causative organism and vector? **(4 Marks)**
 - b) Discuss the life cycle of malaria in the human body **(8 Marks)**
 - c) Incubation period and symptoms of attack **(4 Marks)**
 - d) Control of the infection **(4 Marks)**
- Q3. Fungi have been known to causes serious infections in humans
- a) Name two mycoses and their causative fungi **(4 Marks)**
 - b) Describe the opportunistic mycoses that affect humans **(16 Marks)**
- Q4. Discuss the following in reference to viruses:
- a) The microorganism that causes cervical cancer **(4 Marks)**
 - b) Explain the approaches used for prevention and control of poliomyelitis **(6 Marks)**
 - c) Explain the causative agents, pathogenesis and treatment of Hepatitis infection **(10 Marks)**

END